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ABSTRACT

Radiological sciences education in Kentucky and articulation within this field are examined, based on the Kentucky Allied Health Project (KAHP), which designed an articulated statewide system to promote entry and exit of personnel at a variety of educational levels. The KAHP model promotes articulation in learning, planning, and resource utilization. The following fields are covered: radiologic technology, nuclear medicine technology, radiation therapy technology, medical physics and health physics, and radiological health. Information is provided on educational programs in radiological sciences fields, accreditation, and certification. The Radiological Sciences Discipline Advisory Group (DAG) developed a curricular component matrix to compare curricula and provided the basis for planning for articulation between 24-month certificate radiography programs and 24-month associate-degree programs. The DAG also updated the American Society of Radiological Technology 1976 curriculum guide and addressed entry-level clinical procedures. An articulation model was also developed that illustrated all possible sequences of transfer with the radiological sciences in Kentucky, and transfer agreements between Kentucky colleges were negotiated. The use of the Program Evaluation and Review Technique is addressed and transfer agreements and maps showing schools offering radiological sciences programs are appended. (SW)

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RADIOLOGICAL SCIENCES

HE 015 793

STATE SYSTEM FOR ALLIED HEALTH EDUCATION

KENTUCKY ALLIED HEALTH PROJECT

RADIOLOGICAL SCIENCES

DISCIPLINE ADVISORY GROUP

FINAL REPORT

Commonwealth of Kentucky
Council on Higher Education
Frankfort, Kentucky 40601

Harry M. Snyder
Executive Director

June, 1982

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PREFACE

The Kentucky Council on Higher Education began a grant project to study and coordinate Allied Health Education in Kentucky in September 1979. The focus of the Kentucky Allied Health Project (KAHP) was to develop an articulated educational system within the various health programs throughout the state.

With the diversified application of medical ionizing radiation and the rapid clinical integration of computerized technology, the radiological sciences are compelled to address intra-disciplinary educational needs. The KAHP provided a way for the radiological sciences programs in Kentucky to develop a network for program articulation for: (1) nuclear medicine technology, (2) medical physicist, (3) radiation therapy technology, (4) radiological health, and (5) radiologic technology.

As part of KAHP activities a representative Discipline Advisory Group (DAG) from existing programs was selected to develop a mechanism for career mobility within the radiological sciences programs. To accomplish the primary focus of program articulation, the group had to: (1) modify, without compromise, the existing American Society of Radiological Technology standard (basic) curriculum for compatibility with program types, (2) delineate roles and functions, and (3) identify performance objectives for routine clinical procedures. The intent was to reach agreement on educational standards for the 24 month radiologic technology program. From the didactic and clinical course information, we developed program transfer agreements and aligned each basic program with nuclear medicine and radiation therapy programs.

For the medical physicist and radiological health programs, it became clear that realistic articulation would require increased pre-professional course study in mathematics and sciences, for most students to enter these higher level radiological sciences programs.

The result of almost three years of work for the Radiological Sciences DAG is the completion of some and the continuing negotiations of many other program transfer agreements. Without the loss of autonomy, interinstitutional program compatibility now exists and students statewide may realistically develop their knowledge and skills in a vertical or lateral direction in radiological sciences.

The Radiological Sciences DAG was so successful, the group requested that they be permitted to continue their meetings. At its final meeting the group outlined new objectives which are included in this report.

Frances E. Campeau

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While many individuals have contributed to the accomplishments of the Kentucky Allied Health Project, special thanks and recognition go to Joy M. Kirchner, and Joseph Hamburg, Dean, Allied Health Professions, University of Kentucky. Dr. Kirchner wrote the initial grant application while she was the Associate Director for Allied Health Education at the Council on Higher Education with the encouragement of Dr. Hamburg. Together their pragmatic but visionary planning laid the foundation for a statewide system of allied health education. We thank them.

A special word of thanks goes to Council staff members who helped make our work successful. We appreciate the support that the Executive Director, Harry M. Snyder gave to the project. The support given by Robert L. Barnett, Director of Policy Studies during the first two years of the project was invaluable. He guided the recruitment and hiring of project staff, oriented new staff, and assisted in providing information regarding policies and procedures that were essential to the initial planning of the project and its success. In addition, E. L. (Angie) Hebbeler, Director for Health Programs and Roy P. Peterson, Deputy Executive Director for Academic Affairs gave freely of their expertise and time. For the first two years of the project Gary G. Breegle was assistant project director. His guidance in planning, evaluation and research brought inestimable value to our efforts.

The Council's computer science staff also provided essential assistance. We appreciate the support of Michael R. Bailey, Linda P. Eldridge, Angela Mahoney and J. Kenneth Walker.

The reports could not have been prepared without the help of the Council's secretarial staff. In particular we are grateful to Darlene Blade, Teresa K. Kinne, and Ruth A. Taulbee for their patience and hardwork during the preparation of the reports. We also appreciate the secretarial assistance of Elaine F. Fultz, Diana Mangeot, Brenda Sageser, Shari Sullivan, Sandy K. Thurmond, Charlotte Vance and Sandy Waits.

We asked many others for their advice and counsel, and wish to recognize them for their contribution. They include the following: Wanda D. Bigham, Morehead State University; Ann S. Bisconti, American Society of Allied Health Professions; Keith D. Blayney, University of Alabama; Ralph Boatman, University of North Carolina; Frank G. Dickey, Chairman, National Commission on Allied Health Education; Marie C. Dietrich, New Jersey School of Allied Health Professions; Carley Dodd, Western Kentucky University; Richard J. Dowling, American Society of Allied Health Professions; Eleanor Gilpatrick, Hunter College; Robert Hutson, Quinnipiac College; Frank Kirk, International Technologies; Robert E. Kinsinger, W. K. Kellogg Foundation; William Knisely, Medical University of South Carolina; Craig Scanlan, Brookdale Community College; Dan Southern, Western Carolina University; Sharon Sweeting, Jackson Memorial Hospital; C. Kenneth Tanner, University of Tennessee; Robert Tomlinson, University of Illinois; and Irene Woodall, Bala-Cynwyd, Pennsylvania.

SUMMARY

The major goal of the Kentucky Allied Health Project was to design an articulated statewide system permitting entry and exit of prepared personnel at a variety of educational levels. Six disciplinary clusters were included in the project (1) clinical laboratory sciences, (2) dental auxiliaries, (3) dietetics/nutrition, (4) rehabilitation therapies, (5) radiological sciences, and (6) respiratory therapy.

Highlights of the accomplishments of the Radiological Sciences Discipline Advisory Group include the following:

1. Development of a Curricular Component Matrix. A curricular component matrix was developed by the radiologic technology advisory group members. This matrix enhanced the group's ability to compare curricula and provided the basis for planning for articulation between 24-month certificate radiography programs and 24-month associate degree programs.

2. Updated ASRT 1976 Radiologic Technology Curriculum Guide. The radiologic technology advisory group members updated the curriculum guide and used it as the content base for the model 24-month radiographer curriculum. In addition, entry level clinical procedures were written in a uniform format.

3. Development of a Theoretical Articulation Model. A theoretical articulation model was developed which illustrated all possible sequences of transfer within the radiological sciences within the Commonwealth of Kentucky.

4. Negotiation of Transfer Agreements. The following transfer agreements were developed:

From	To
Radiologic Technology Good Samaritan Hospital (C)	Radiological Technology University of Louisville (AD)
Radiologic Technology Good Samaritan Hospital (C)	Radiologic Technology University of Kentucky Community College System (AD)
Radiologic Technology Good Samaritan Hospital (C)	Radiologic Technology Morehead State University (AD)
Radiologic Technology Good Samaritan Hospital (C)	Radiologic Technology Northern Kentucky University (AD)
Radiologic Technology Sts. Mary & Elizabeth Hospitals (C)	Radiologic Technology University of Louisville (AD)

6.0 Develop clinical education modules for radiologic technology.

6.1 Identify the similarities in format and content of the clinical education component in Kentucky radiologic technology programs.

6.2 Develop standard clinical education modules for radiologic technology programs.

7.0 Maintain the involvement of hospital-based radiologic technology programs in DAG activities.

8.0 Routinely update the listing of radiological sciences program directors and disseminate to DAG members.

From	To
Radiologic Technology Kings' Daughters Hospital (C)	Radiologic Technology Morehead State University (AD)
Radiologic Technology Madisonville Vo-Tech School (C)	Radiologic Technology University of Kentucky Community College System (AD)
Radiologic Technology Statewide (AD)	Nuclear Medicine Technology University of Louisville (BHS)
Radiologic Technology Statewide (C) (AD)	Radiation Therapy University of Kentucky (C)
Radiation Therapy University of Kentucky (C) Simultaneous Registration	Health Sciences University of Kentucky (BHS)

The following recommendations for the future were made.

1.0 Hold annual or semiannual meetings of the Discipline Advisory Group.

1.1 Organization for these DAG meetings should be on a volunteer basis to be rotated to the facilities of individual group members.

1.2 At each meeting, agendas should be planned for succeeding meetings and interim activities.

2.0 Maintain the communication link between the Discipline Advisory Group and the Council on Higher Education.

3.0 Continue the negotiations currently underway to develop and sign transfer agreements between radiological sciences programs.

4.0 Conduct the manpower study designed by the DAG to survey all types of radiological personnel and their administrators.

4.1 Use the results of the manpower study to help determine where transfer agreements might best augment underserved areas in Kentucky.

4.2 Use the results of the manpower study to identify the existence of multicompetent practitioners and implications for educational programs to provide advance clinical skills.

5.0 Evaluate the success of the transfer agreements in facilitating students' career mobility by documenting the number and origin of transfer students.

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1 PROJECT OVERVIEW

Setting for the Project

The Kentucky Council on Higher Education, a statewide coordinating board, was awarded a grant in 1978 from the U.S. Department of Health and Human Services to develop a statewide system for allied health education. To adequately describe the development of KAHP, a brief description/definition of the purposes and functions of coordinating boards will be presented.

Kentucky Higher Education and Kentucky State Government are by necessity linked together, sometimes as adversaries, sometimes as partners. Sandwiched between the public colleges, universities and state government is the Kentucky Council on Higher Education, a statewide coordinating board.

The Council is one of the country's oldest higher education coordinating agencies (1934); however, until it was strengthened in 1966 and again in 1972, it had little authority with which to perform its coordinating responsibilities.

In the 1970's the Commonwealth, through the Council on Higher Education and with the full cooperation of the universities, took the initial steps toward the development of a system of higher education. A 1976 Council report, Kentucky and Comprehensive Planning for Higher Education, states:[1]

> Although Kentucky has a great variety of public institutions, they are not organized into a cooperative system through a coordinated balance of programs, through consideration of unnecessary duplication or overlapping responsibilities....

In 1977, the adoption of mission statements was aimed at organizing a system of higher education. The Council stated that the system was to promote "quality education and research, efficient use of resources, effective communications and smooth movement of students between institutions." The Kentucky Allied Health Project (KAHP) was conceived and designed as a sub-system within this total system. As a sub-system for allied health education, KAHP would strive for both efficient utilization of resources and the development of smooth movement of students between institutions.

The publication entitled "A System of Higher Education in Kentucky Including Mission Statements" presents several characteristics of this system.[2] Two characteristics which directly relate to the goals of the Kentucky Allied Health Project are:

1. "Centralized coordination of program offerings at all levels and among all institutions."

2. "Recognition of and program articulation with the vocational schools in implementing the 'career lattice' concept in post-secondary education."

For a statewide system of higher education to function smoothly, policy decisions must be made that support the characteristics of the system. Each institution must support the system's development. In a system of higher education, one of the central requirements is cooperation between and among institutions.

The Council's belief in and support of a higher education system provided the conceptual framework for KAHP. All curriculum decisions were entirely the responsibility of the cooperating faculty and institutions. In fact, because the Council views academic freedom as a universal and

absolute concept, the success or failure of KAHP was directly related to the institutional faculties. These faculties had to support the philosophy of articulation, be willing to engage in curriculum experimentation and to not only consider the needs of their respective institutions but the needs of the state as a whole. Some faculties did this with great success and a sense of commitment to students from all levels of higher education and all types or institutions (i.e., vocational, private, public, and proprietary); other faculties clung to professional and personal vested interests and were unable to respond to state and/or institutional needs.

The Council's willingness to respect and recognize the claims of academic freedom and procedural autonomy and the institution's equal willingness to recognize the state's right to participate in statewide planning for allied health education contributed to some of KAHP's success. These cooperative attitudes resulted from the fact that the formal structure brought the institutions and the Council together as partners in a joint venture firmly believing in shared group decision making and leadership.

Purpose of the Project

The purpose of the Kentucky Allied Health Project (KAHP) is to use the resources available to develop and implement a model articulated system of allied health education. The articulated system is viewed in the broadest sense to include articulation in learning (i.e., plans to permit a smooth transition from one education level to another) and articulation in educational planning and resource utilization. There are currently 105 allied health programs in Kentucky, seventy-two (72) of these programs are offered by the public sector. Allied health activities have significantly increased the interinstitutional cooperation and coordination among these programs.

Significance of the Kentucky Allied Health Project

Allied Health education programs in the 1960s underwent a significant growth phase fueled by federal monies from the Allied Health Professions Act of 1966. The funding stimulated the coalescence of many programs into schools of allied health professions in a collegiate or university setting. These schools expanded their student enrollments to fill the proliferating programs which represented a response to the nation's diverse health manpower needs.

However, curtailment of direct federal funding coupled with greater governmental demands for fiscal accountability in the late 1970s and early 1980s led to such events as program moratoria and a closer scrutiny of the fundamental goals and objectives of these schools.

While the development of allied health education has been characteristically segmented, the impact on the management of education for the 1980s mandates activities that are collaborative and articulated. Can allied health education in Kentucky, faced with such driving forces as shrinking economic resources, demands for accountability in costs, productivity and outcomes and changes in major technologies, meet these challenges?

In an attempt to meet these challenges, the Commonwealth of Kentucky has proposed the development of a statewide system for allied health education. This system interlocks segmented educational components into a comprehensive structure. The system is based upon three major social concerns:

(1) The concern to meet the needs of the patient.

Many driving forces are pressing for new approaches to allied health education which will culminate in a comprehensive system of care for the patient. If the goal of comprehensive care is to be

achieved, there must be meaningful collaborative arrangements.

(2) The concern to meet the needs of students.

Students are seeking mechanisms for career mobility. A system of allied health education must be developed to help meet these needs. Much of the research on vocational choice and career mobility strongly support a flexible system of education with several entry and exit points. The goal of Kentucky's system of allied health education is to eliminate any unnecessary duplication or artificially imposed barriers that inhibit the ability or motivations of the individual.

(3) The concern to slow the spiraling cost of health care.

Allied health education cannot continue to operate oblivious to the cost to the patient. Allied health educators must recognize and find solutions to the problems of (1) eliminating unnecessary program duplication, (2) avoiding overtraining in terms of functions performed, and (3) improving the effectiveness and efficiency of programs.

In summary, the Kentucky Allied Health System is based upon three major social concerns: (1) the goal of comprehensive care for the individual, (2) the educational needs of the students, and (3) better utilization of existing resources.

Several barriers make the task of developing a system for allied health a difficult one; barriers created by curricula, educational institutions, health care facilities, and laws and state government agencies. However, perhaps the most formidable problem is overcoming professional biases. The temptation to exercise territorial imperatives is understandable. However, our greatest success occurred when educators philosophically believed in career mobility. In contrast, our greatest failures occurred when educators did not hold this philosophy and carefully guarded their "territory." To a

very real extent, philosophy and territoriality retarded progress.

Perhaps the significance of KAHP is that a system has been developed considering:

What is best for the patient?

What is best for the student?

How can a system of allied health education be developed that is highly efficient and integrated?

Organization of KAHP

Six phases were designed to meet KAHP's major objective of developing and implementing a statewide system of articulated allied health education. These phases are summarized in Table 1.0.

Table 1.0.

Phases of the Kentucky Allied Health Project

Phase I	Phase II	Phase III
Literature Review Manpower/Program Data Program Directory Evaluation Design Task Force	Six Discipline Advisory Groups Evaluation and Research Technical Advisory Group Role and Function Delineations Curriculum Reviews Manpower Models	Model Curricula Potential Articulation Designs Transfer Agreements Drafts System Recommendations
Phase IV	**Phase V**	**Phase VI**
Transfer Agreement Negotiations	Final Articulation Designs Articulation System Preparation Recommendations to CHE for Action	Statewide System Project Evaluation Articulation System Monitoring

To develop a model for statewide planning in allied helath education, six disciplinary clusters were chosen. These clusters include: (1) clinical laboratory sciences, (2) dental auxiliaries, (3) nutrition/dietetics, (4) radiological sciences, (5) rehabilitation therapies, and (6) respiratory therapy. All levels of programs within each discipline cluster which existed in Kentucky were included in the system.

Phase I: Planning

KAHP's planning was accomplished by several individuals and groups working in concert providing a rich interplay of ideas and abilities. In the planning phase, the staff began a literature review to determine if similar efforts had been made, their strengths and weaknesses, and their relevance to KAHP. In addition, the staff began to synthesize relevant manpower and educational program data. The merging of allied health manpower data and educational program data was viewed as essential for statewide planning. While the Council collected information regarding public higher education, a complete directory needed to include private education, vocational education, hospital-based programs, and proprietary programs. Consequently, the first planning task was to complete a statewide inventory of allied health education programs. This inventory provided the basis for activating the discipline advisory groups for Phase II.

The establishment of an overall project evaluation design was also completed in Phase I. The planning and evaluation procedure known as Program Evaluation and Review Technique (PERT) was selected to provide continuous program evaluation of progress toward the achievement of predetermined objectives.[3]

A final activity in Phase I was the activation of the Allied Health Task

Force in May, 1979. The fifteen (15) member Task Force was composed of representatives from the public colleges and universities, independent colleges and universities, vocational schools, practicing clinicians, and hospital administrators. The primary objectives for the Task Force were to provide general coordination for the project and help secure support for the project from essential publics.

Phase II: Developing and Comparing Curricula

The first step for Phase II was to activate the six discipline advisory groups in September, 1979. The membership for these six advisory groups was recommended by the Allied Health Task Force. Each group was composed of approximately 15 members (a total of 90 individuals). These individuals were chosen to represent public and independent colleges and universities, vocational schools, proprietary schools, hospital-based programs, practicing clinicians, and professional organizations. (See Figure 1.0.) The central concept used in selecting these advisory group members was that those individuals responsible for implementing project recommendations should assume key leadership positions in developing the recommendations. It was also the project staff's basic belief that there should be shared responsibility between educational institutions and the statewide coordinating board for planning a system of allied health education.

In addition to the activation of six discipline advisory groups, the project was also assisted by an Evaluation and Research Technical Advisory Group. The primary objectives of this group were to (1) develop the methods

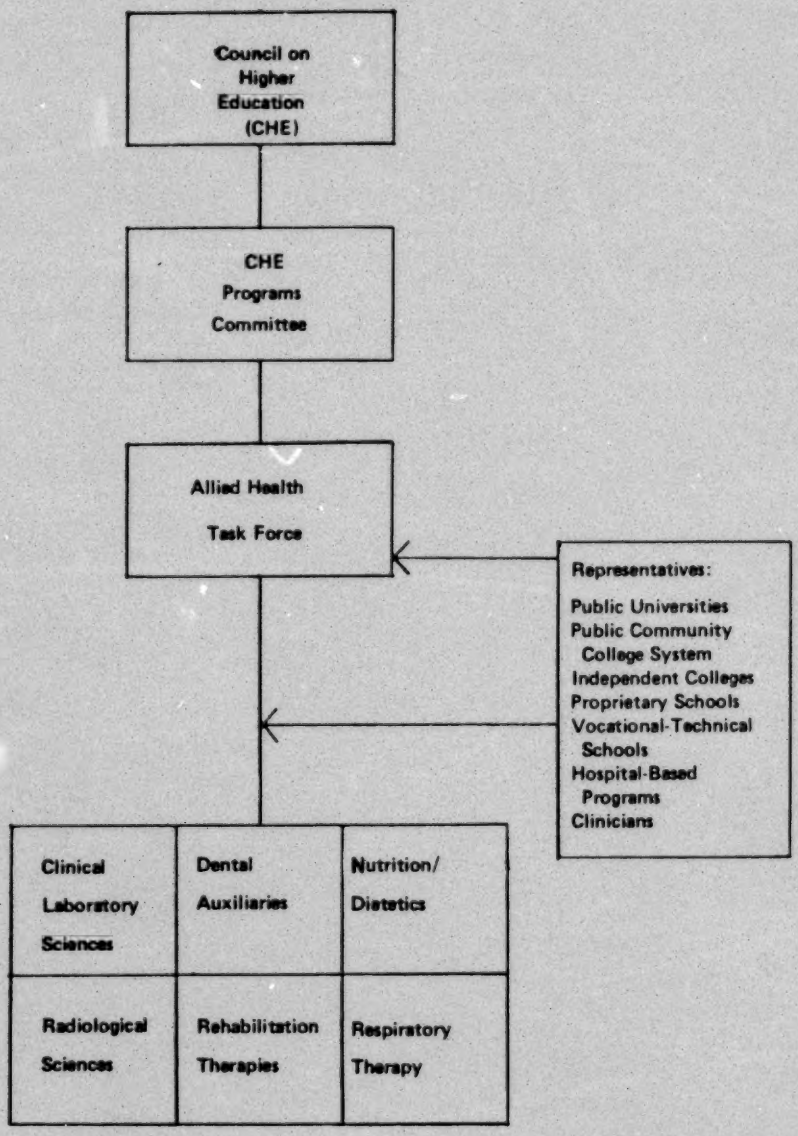

Figure 1.0. Organizational Structure of the Kentucky Allied Health Project

and instruments for the evaluation and implementation phase of the project, (2) review a competencies research model for use by two discipline advisory groups, (3) develop a manpower projection model, (4) develop a graduate follow-up model, (5) develop a program cost assessment model, (6) develop a practitioner profile component, and (7) guide data collection and analysis.

A major activity in Phase II was the delineation of roles and functions for each level of practice within each allied health profession and the identification of competencies by level with the goal of developing curricula. This task was seen as an essential prerequisite to the design of articulation models. Each discipline advisory group approached the delineation of roles and functions differently depending on the success of their respective professional associations.

The Respiratory Therapy and Nutrition/Dietetics groups chose to use the Health Services Mobility Study (HSMS) Method of Task Analysis and Curriculum Design [4] since neither group had an acceptable and comprehensive delineation of their practices. The Clinical Laboratory Sciences group validated competencies that had been developed by their professional society. The Dental Auxiliaries group chose to utilize the roles of dental auxiliaries as specified by the Kentucky Dental Practice Act. While they realized that roles may vary by state, they chose to develop an articulation model that could work within Kentucky.

The Radiological Sciences group was represented by several similar but yet unique professions (i.e., radiography, radiation therapy, nuclear medicine, and radiation health). This group approached the delineation of roles and functions on separate but parallel paths. Each discipline in the cluster used existing resources to finalize their curricula.

While each discipline advisory group was developing a curricula that contained the information needed for safe, competent professional practice, they also gathered program-specific information such as course outlines, clock hours, percentage of lecture, lab/and/or clinical components per course, minimal acceptable grades and the pre-professional and professional components of each curriculum. The data provided the fundamental information to begin planning the early phases of transfer negotiations.

Another major activity in Phase II was the development of a resources/ requirements model for each discipline for the purpose of manpower projections. The manpower data is essential information when considering the establishment, expansion, continuation, or termination of allied health programs. Three manpower models will be applied to the five allied health disciplines studied in KAHP. The models are: (1) manpower-population ratio, (2) trend analysis based on time series, and (3) health needs. Based on the manpower models KAHP completed for physical therapy [5] and respiratory therapy, [6] data are being collected to complete the clinical laboratory sciences and radiological sciences manpower models. While the limitations of making manpower projections are recognized, the information added another dimension to statewide planning efforts.

Phase III: Articulation Review

Joint meetings between the Discipline Advisory Groups and the Allied Health Task Force were held in the early summer of 1981. Together the groups (1) reviewed developed curricula, (2) reviewed the articulation designs within each discipline, (3) discussed recommendations for implementing and finalizing draft articulation agreements, and (4) discussed recommendations for implementing, monitoring, and evaluating the system.

These joint meetings provided an opportunity for the groups to share

not only their products such as curricula and draft transfer agreements, but also to discuss broader and less measurable outcomes of the process.

For example, the Task Force representative from vocational education shared the following:

> When the vocational education administrators asked the vocational faculty to participate on this project they agreed, but with little enthusiasm. However, their efforts resulted in the development of mutual respect between vocational education faculty and higher education faculty in the state. In addition, it enhanced communication within vocational educational programs. As a result of this communication, curricula were revised and strengthened. Furthermore, the vocational education faculty feel kinder toward higher education than they have in the past. Previously, they had felt like second class citizens in higher education. They emerged feeling that they were partners or co-equals. Consequently, they felt good about themselves and their programs. We have better vocational education programs because of their efforts.

Phase IV: Developing and Negotiating Transfer Agreements

After the joint meeting(s) of the Discipline Advisory Groups and the Task Force, mini-meetings were planned with selected Task Force members and faculty to help plan for the implementation of some of the transfer agreements.

Competency-based education was used as the theoretical framework for developing and negotiating transfer agreements. Types of agreements included the block credit transfer agreement and the course specific transfer agreement. Agreements were negotiated between educational systems and between specific programs/institutions. [7]

Phase V: Preparing the Articulation System

The primary activities in this phase included (1) final preparation of discipline specific articulation designs and (2) the preparation of a comprehensive statewide articulation system. Throughout the project the Task

Force had a major responsibility in the formulation of recommendations for a statewide system. These recommendations will go to the Council's Programs Committee and then to the Council on Higher Education for action.

Phase VI: Evaluation and Revision

Two primary evaluation components were planned: (1) evaluation of the project's ability to meet its stated objectives and (2) recommended procedures for evaluating the ability of the implemented system to facilitate the entry into and exit from an allied health educational program by capitalizing on student's previous relevant education and experience (i.e., ongoing monitoring of the success of the transfer agreements.)

KAHP's Approach to Leadership.

This section is included to share with others the philosophy upon which the group meetings were planned. In addition it will explain the evoluntary developments in terms of group process. Particular emphasis will be placed on the importance of group centered leadership and leadership as a shared function. It is hoped that by sharing these intimate relationships others will be encouraged to participate in similar endeavors.

Traditional views of leadership: (1) focus on the group's task; (2) the leader directs and controls; (3) the feelings and emotions of group members are not recognized; (4) the leader assumes full responsibility for decisions; and (5) the task becomes more important than individual needs.

These traditional views of leadership were abandoned. KAHP staff viewed leadership as "Group Centered Leadership." While fully recognizing the importance of the task of developing a statewide system for allied health education, we also recognized that member interactions and the emotional

reactions of individuals would have a profound effect on the successful completion of our task.

Consequently we viewed leadership as service. Such service included 1) helping the group develop a trusting climate, 2) encouraging members to freely express their feelings and 3) assisting members in accomplishing their task.

Leadership was not something that just the designated project staff members did. Leadership was shared with all members of the group. By recognizing that leadership was a group responsibility, it was also recognized that success or failure would be equally shared by all group members. This concept of shared group leadership was important because it recognized that no one person could possibly be simultaneously aware of all the group-maintenance tasks, group-building tasks, and individual problems existing at any given moment within the group. Such awareness must be shared by all members of the group.

In summary, our belief in group centered leadership was based on the assumptions that: (1) the meetings were owned by the members; the KAHP staff was a helper to the group; however, the group was responsible for all major decisions; (2) members not only shared ownership, but responsiblity for completing tasks; (3) feelings, emotions, conflict were recognized as legitimate; and (4) the needs and feelings of all members were viewed as important.

With this as our philosophical framework, we observed each discipline advisory group work through three stages of group development.[8] Stage one considers orientation, hesitant participation, and search for meaning. Our orientation meeting held on September 6, 1979 provided the setting for stage one "goblet issues". During this stage group members size each

other up through discussion of nonemotionally laden topics. The term comes from cocktail party type communication where each guest sizes up the others by looking through a cocktail "goblet".

At this meeting Dr. Joy Kirchner, who had written the project grant, described the historical foundation for the project. Project objectives were described along with the roles of the discipline advisory groups and the project staff. Also at this meeting a group process activity called "Self Portrait" was completed. The self-portrait activity was planned to help promote positive relationships among and between discipline advisory group members and project staff. The advisory group members and project staff were asked to draw a story of their lives on a large piece of paper and share this story with the other members of the groups. While on the surface this appears to be a relatively unsophisticated procedure, it provided a successful way to meet one another fairly quickly. Hopefully, it assisted in the development of an accepting environment within which the groups could work during the coming year.

In stage two, issues regarding dominance, control, and power emerge. Hostility to the "leader" may also emerge as the group members realize that the "leader" is not perfect. We found that some meetings were not as effective as others; some advisory groups willingly shared all their available resources, (i.e., curricula, admissions policies and student success/failure rates) while other groups found it difficult to share. Democracy takes time; the price of group decision making and consensus is time, trust, and openness. Futhermore, tradition seemed to inhibit meeting effectiveness. For example, the older more established professions such as clinical laboratory sciences and the rehabilitation therapies had much more difficulty planning sequences of transfer, especially for the professional courses within the curricula. In

contrast, respiratory therapy found the task less cumbersome. However, at no time during stage two did we feel overt hostility.

In stage three group members began to have concerns about intimacy and closeness. As the groups began to be able to more freely address their positive and negative feelings, they became more cohesive and mature. This maturity was characterized by the following:

(1) Serious involvement in activities

As the members began to feel a sense of ownership and involvement in their tasks, they assumed greater responsibility for such activites as report writing and team building.

(2) Trust and caring

The trust and caring that emerged in some groups allowed the members to express concerns, feelings, fears, and ideas.

(3) Accepting new members

It was recognized that group membership would always be in the process of change, adding new members and losing old ones. However, new members were accepted and seen as a potential resource.

The previous description basically describes the work of the five discipline advisory groups that were viewed as somewhat or very successful. However, not all our discipline advisory groups were successful; and we would like to briefly try to present a rationale for why one group failed. A successful group interacts over time to accomplish one or more goals that are valued by each of the participating individuals.[9] The physical therapy advisory group's philosophy statement stated that there was currently no organized effort on the part of the physical therapy profession to facilitate the upward mobility of the physical therapist's assistant within the profession. Mirroring this philosophy, physical therapy's support of transfer for the assistant was

somewhat less than whole hearted.*

As a result the project goals were in conflict with the goals of the physical therapy advisory group members. Because upward mobility for the assistant was not "valued" by this group, the project's objectives for this group were not achieved. This was further reinforced to us by such statements as - "I don't feel its appropriate for this group to do more at this time." "Prove there is a need for articulation by a statistical study." "We met our objectives a long time ago, when we stated articulation was not appropriate at this time" " I would prefer if the project were terminated."

To summarize, no matter how competent the group leader or how many resources are available in terms of time and money, if the group does not highly value the goals, the group will fail.

To conclude we would like to offer a number of suggestions that may be useful to newly formed groups that have as their goal the development of articulation agreements:

(1) Develop an awareness for the interdependent behaviors that must be performed by group members.

Task behaviors are those behaviors that are related to achieving the groups goals such as giving suggestions or directions and seeking information. Maintenance functions are those behaviors related to maintaining harmonious relations among members such as helping, rewarding, relieving tension by joking, and showing satisfaction. Both task behaviors and maintenance behaviors are equally important.

*While the Rehabilitation Therapy DAG did not develop an articulation model that transferred professional course credit, an articulation agreement between the Physical Therapy Program at the University of Louisville and the Physical Therapist Assistant program at Jefferson Community College was developed after the Rehabilitation Therapy DAG decided to discontinue meeting.

(2) View leadership as a shared group function.

By viewing leadership as a shared group function, all members are encouraged to contribute and the sharing of leadership ensures that all the resources of the group will be used productively.

(3) Willingly accept new members.

While a high turnover of group membership may indicate that something is seriously wrong within the group, some turnover is natural. Welcome each new group member as a valuable resource.

(4) Allow "hidden agendas" to surface in open discussion.

Hidden agendas occur because an individual believes that the item may be judged as wrong or inappropriate, rather than as a reflection of a legitimate need or purpose. Remember, group members may be trying to simultaneously achieve individual and group goals. Often the degree to which both goals can be achieved determine the success of the group. Recognize that members may bring a hidden agenda to the group--one they hesitate to share openly because it is so self-oriented. Allow hidden agendas to surface in open discussion so that personal needs may be handled without disturbing the group.

(5) View conflict as natural.

Most substantive issues will involve some conflict. View this conflict as natural and indeed inevitable. Conflict worked through constructively can provide an important success experience for the group. Furthermore, it will reduce the fear of conflict and further strengthen the group.

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2 RADIOLOGICAL SCIENCES EDUCATION

For the purposes of the Kentucky Allied Health Project the radiological sciences included a cluster of five related yet distinct disciplines:

(1) radiologic technology,

(2) nuclear medicine technology,

(3) radiation therapy technology,

(4) medical physicist, and

(5) radiological health.

The common goal for the DAG was to negotiate transfer agreements between programs within the same discipline and among others as appropriate. However, the DAG members from each discipline initially addressed issues within their respective profession laying the groundwork for cross-discipline articulation.

Representatives from each of the radiological sciences programs existing in Kentucky participated on the DAG. However, in order to accommodate a manageable number of participants only one of the six hospital-based programs was active in a major portion of the project. In negotiating transfer agreements all the hospital-based radiologic technology programs were invited to participate.

To provide an overview of each discipline the following discussion presents

1) a definition, 2) a description of educational pathways to practice, 3) certification and 4) educational challenges of articulation.

RADIOLOGIC TECHNOLOGY (Radiography)

Definition

A radiographer is responsible for the administration of ionizing radiation to humans or animals for diagnostic or research purposes. Following the instruction of a specialist physician (radiologist) radiographers use x-ray films (radiographs) to examine patients for use in diagnosis of human medical problems such as broken bones, ulcers, tumors, or disease or malfunction of various organs. The radiographer adjusts the x-ray equipment to the correct setting for specific examination, positions the patient, makes the required number of radiographs. The radiographer administers chemical mixtures to patients under the supervision of a physician so that certain organs show up clearly in x-ray examinations. In addition, the radiographer may use mobile x-ray equipment at a patient's bedside and in surgery.

Educational Pathways to Practice in Radiologic Technology

A high school degree with courses in math, physics, and science is required for entry into a program for radiologic technologists. Such programs take two years and include classroom, laboratory and clinical experiences that provide the students with basic education, training in the use of complex equipment, and experience in performing patient examinations.

The art and science of radiography requires that the practitioner achieve a specific level of knowledge and skill. The radiographer must possess and demonstrate knowledge of and competencies in, but not limited to, the following areas: human structure and function, medical ethics, medical terminology,

pathology, patient care, positioning, principles of radiographic exposure, quality assurance, radiation physics, radiation protection and radiobiology.

Twenty-four month curricula are available in hospitals and colleges and universities with approved clinical affiliations. The hospital-based programs award a certificate. This is accepted by some Kentucky colleges and universities and transferred as a block of academic credit toward an associate degree in radiologic technology once a student passes the national registration exam administered by the American Registry of Radiologic Technologists.

Programs for radiologic technologists are accredited by the American Medical Association's Committee on Allied Health Education and Accreditation (CAHEA) in collaboration with the American Society of Radiologic Technologists and the American College of Radiology which sponsor the Joint Review Committee on Education in Radiologic Technology.

Certification

The "R.T. (R)(ARRT)" designation indicates the radiographer has been certified by the American Registry of Radiologic Technology after passing the ARRT national exam and either 1) completion of a formal program of study accredited as described above or 2) completion of didactic education and clinical experience acceptable to the ARRT.

Educational Challenges of Articulation in Radiologic Technology

Certificate programs in hospitals are the least expensive method of education. However, the certificate program does not award academic credit. If certificate graduates want a higher degree, all colleges and universities do not automatically accept the certificate for college credit. However, through the sharing and comparison of curricula, the challenge to negotiate transfer

agreements between Kentucky certificate and associate degree radiologic technology programs has been successfully met. These agreements are presented in the Results section of this report.

Additionally, the medical assistant with limited radiography completes a twelve-month curriculum in medical assisting with additional units in radiologic technology. However curricular comparison revealed that there was not a significant amount of similarity between the medical assistant curriculum and the 24 month radiologic technology curriculum. Consequently, transfer of credit was not possible.

NUCLEAR MEDICINE

Definition

Both the nuclear medicine technician and the nuclear medicine technologist work with radiopharmaceuticals administered to patients for diagnosis and treatment. The technician or technologist receives, positions, and attends to patients and abstracts data from patient records; makes dose calculations on radiopharmaceuticals for use in patients; and is responsible to the nuclear physician in the operation of imaging and counting instrumentation using radiopharmaceuticals. Both the technician and the technologist are concerned with the safety of the patient and must be aware of and responsible for the dose levels administered to the patient during diagnosis and treatment. While both may be involved, the technologist will be prepared to assume a greater degree of responsibility for the disposal of radioactive waste materials, the safe storage of radioactive isotopes, and maintaining inventory control of radiopharmaceuticals used in the treatment center during the diagnostic procedures. The technologist also has preparation in management, education and research.

Educational Pathways to Practice in Nuclear Medicine

Programs are generally one year in length. Institutions offering accredited programs may provide an integrated educational sequence leading to an associate or baccalaureate degree over a period of two or four years. A two-year (associate degree) educational program for nuclear medicine technicians and a four-year (baccalaureate degree) educational program for nuclear medicine technologists exist in Kentucky. In both instances, the professional curriculum specifically related to nuclear medicine technology should be a minimum of twelve months in length. Courses of study offered to students usually include basic anatomy and physiology, pathology, mathematics, radiation physics, nuclear physics, medical instrumentation, radiation biology, radiation protection, basic laboratory testing procedures, the clinical application of radionuclides, and a variety of related studies such as patient care, medical ethics, medical terminology and quality assurance.

Nuclear medicine programs are accredited by the Committee on Allied Health Education and Accreditation (CAHEA) of the American Medical Association in collaboration with the American Society of Radiologic Technologists, the American College of Radiology, the American Society for Medical Technology, the American Society of Clinical Pathologists and the Society of Nuclear Medicine which sponsors the Joint Review Committee on Educational Programs in Nuclear Medicine Technology.

Certification

Upon completion of an accredited nuclear medicine technology program and passing a national examination, a graduate may become certified by the American Registry of Radiologic Technologists. The certification is designated by the letters "R.T. (N), (ARRT)." Graduates may also be certified by the

National Medical Technology Certification Board (NMTCB) or the Society of Clinical Pathologists.

Educational Challenges of Articulation in Nuclear Medicine

A key issue confronting the nuclear medicine programs in Kentucky was to determine the common components in the associate and baccalaureate degree programs. In comparing the two existing curricula similar and dissimilar areas were identified and recommendations made for transfer of credit.

The challenge to determine the feasibility of articulation between the associate and baccalaureate programs culminated in the agreement that although both programs produced entry-level technologists, the bachelor's degree program contained advanced procedure areas in addition to educator/management tracts. The addition of education/management skills and increased knowledge and experience in nuclear medicine technology made this articulation pathway realistic and available.

RADIATION THERAPY TECHNOLOGIST

Definition

The radiation therapy technologist assists the radiologist in the treatment of disease by exposing affected areas of the patient's body to prescribed doses of x-ray or other ionizing radiation. The radiation therapy technologist must maintain proper operation of controlling devices and equipment used in radiation treatment, and must share the responsibility with the radiologist for the accuracy of treatment records. The radiation therapy technologist operates complex radiologic equipment and must be mechanically inclined in addition to having an aptitude and ability in the physical sciences and mathematics.

Educational Pathways to Practice in Radiation Therapy

One-year program. An applicant to an approved one-year educational program in radiation therapy technology must be either a graduate of an approved educational program in radiologic technology, a registered nurse with an educational background in radiation physics, or possess equivalent qualifications. The educational program must be at least twelve months in length, and include study in physics, mathematics, pathology, radiobiology, anatomy, treatment planning, nursing procedures, radium therapy, protection and shielding, and professional ethics.

Two-year program. The Essentials of an Approved Education Program for the Radiation Therapy Technologist - Two-Year Program were approved by the AMA house of delegates in November, 1981 to provide an alternate educational program for preparation of the radiation therapy technologist. Applicants to an approved two-year program need not be graduates of approved programs in radiologic technology, but must be qualified as high school graduates or equivalent, with acceptable educational background in the basic sciences and mathematics. The educational program must be at least 24 months in length, and the curriculum includes entry level study in the basic principles of the use of ionizing radiation and related basic sciences.

Certification

Radiation therapy technology has been recognized as a separate discipline within radiologic technology since 1964, when the first certifying examination was adminsitered by the American Registry of Radiologic Technologists (ARRT.) The first set of Essentials for Radiation Therapy Technology, adopted by the AMA House of Delegates in 1968, applied only to one-year programs, since

almost all technologists entering the field of radiation therapy at that time were recruited from radiography and nursing. In 1972, the AMA House of Delegates provided for two-year programs by adopting Essentials for programs with a minimum entrance level of a high school degree.

In 1975, the American College of Radiology (ACR) and the American Society of Radiologic Technologists (ASRT) formed a conjoint committee to combine the separate sets of Essentials for one- and two-year programs for radiation therapy technologists into a single document that would establish standards for all types of radiation therapy technology programs seeking accreditation by the Committee on Allied Health Education and Accreditation (CAHEA). (Allied Health Education Directory, 1980, p. 72)

Educational Challenges of Articulation in Radiation Therapy

Graduates from radiologic technology certificate and associate degree programs are eligible for admissions to the Radiation Therapy certificate program at the University of Kentucky Medical Center. However, the key issue confronting articulation in radiation therapy was how to transfer hospital based certificate granting educational experiences into academic credit so that students could work toward a bachelor's degree. This problem was further complicated by the University of Kentucky's transfer requirements. After much work with the University of Kentucky admissions personnel and the faculty and administration in the College of Allied Health at UK, a sequence of transfer was negotiated. This will enable students enrolled in the radiation therapy certificate program to work toward a Bachelor of Health Science Degree in the College of Allied Health.

MEDICAL PHYSICIST

Definition

Medical physics is primarily an applied branch of physics. It is concerned with the application of the concepts and methods to the diagnosis and treatment of human disease. It is closely allied with medical electronics, the development of medical instruments, bioengineering which is the application of engineering principles to biology and medicine, and with health physics, the assessment and control of radiation hazards. Medical physicists are concerned with three areas of activity: research, consultation with physicians, and teaching.

Educational Pathways to Practice in Medical Physics

Many U.S. universities offer a variety of academic programs in medical physics leading to a master's or doctor's degree. The most common program is called Medical Physics or Radiological Physics and is concerned mainly with the physical properties and medical applications of radiation of all wavelengths.

Academic training alone does not make a medical physicist. Practical experience with clinical problems is essential, and may be obtained by a practicum or traineeship.

RADIOLOGICAL HEALTH SCIENCE

The profession of health physics/radiological health prepares individuals to work in hospitals, universities, and industry as radiation safety officers, in nuclear power plants as health physicists or radiation safety engineers, in national laboratories as health physicists and in federal and state agencies as regulators.

Educational Pathways to Practice

Radiological Health Specialists curricula may lead to a Bachelor's or a Master's Degree. The curricula includes knowledge and skills derived from the field of physics, mathematics, chemistry, biology, medicine and management. For this reason, the required curriculum covers a wide spectrum of subject areas. The graduate of a radiological health science program should have professional competencies in the following areas: 1) evaluation of exposure or contamination levels, 2) design and analysis of shielding, 3) radiation protection education and training of professional and/or lay personnel, 4) research and development of radiation standards and guidelines, 5) personnel monitoring and 6) decontamination operations.

Accreditation Status of Academic Programs in Medical Physics and Health Physics

Neither in medical physics nor in health physics is an accreditation mechanism currently in place. The AAPM (American Association of Physicists in Medicine) has within the past two years established a Commission on Accreditation with the charge to evaluate the need for accreditation procedures, establish criteria, and construct a mechanism for implementation. This Commission is currently at the stage of gathering information relating to criteria, and is being assisted in this task by the Education and Training Committee, which is in the process of establishing the appropriate content necessary to medical physics programs at the undergraduate and graduate levels. Accreditation will almost certainly be a part of educational programs in medical physics, but implementation is probably a minimum of three to five years in the future. Please note, however, that quality of individual expertise has, and continues to be, evaluated through the mechanism of certification

by the American Board of Radiology Physics Credentials Committee, which upon request will examine individuals with a minimum of a Master's degree plus two years of appropriate experience.

The Health Physics Society, which is the professional society in health physics/radiological health, currently has no accreditation studies in progress and there appears to be no strong factors which would lead to such studies in the near future. Individual competence is assessed by a certification examination administered by the American Board of Health Physics (ABHP). Eligibility for such an examination includes an appropriate degree plus required experience of up to six years.

Educational Challenges of Articulation in Medical Physics and Health Physics.

The 2-year radiologic technology programs do not provide the mathematical and theoretical science backgrounds at the level necessary to complete the more rigorous upper division requirements found in the undergraduate programs in health physics and medical physics. Therefore, transfer into such undergraduate programs by community college graduates would involve entering at the lower division level and using advance placement procedures to obtain credit for courses whose content has already been learned. Articulation to master's level programs would involve the intermediate step of obtaining an appropriate bachelor's degree.

3 DISCIPLINE ADVISORY GROUP ACTIVITIES

The primary charge for the Radiological Sciences Discipline Advisory Group was to develop a statewide plan for radiological sciences education which would result in an articulated statewide system permitting entry and exit of prepared personnel at a variety of levels and improve interinstitutional efforts to share educational resources.

The purpose of this chapter is to share the Radiological Sciences Discipline Advisory Group's activities and to describe the process that resulted in the negotiation of several transfer agreements.

The Radiological Sciences Discipline Advisory Group activities were divided into three phases. Each phase is described as follows:

Phase One: Orientation Activities. Orientation activities included a review of the charge to the Discipline Advisory Group, the sharing of each program's philosophy and goals and the use of the Program, Evaluation and Review Technique (PERT) for the planning of the DAG's activities. A description of how PERT was used to plan and evaluate the advisory group's activities is illustrated in Appendix A.

Phase Two: Model Curriculum Activities. During Phase Two each specific radiological science professional area addressed the issue of curriculum

development. The development of model competency based curricula was viewed as a necessary prerequisite to the development of transfer agreements. Below is a summary of how each professional area completed this activity:

Radiologic Technology. The roles/functions and practitioner competencies were already fairly well defined by the national professional society. Furthermore, the 14 content areas of the technical portion of curriculum mandated by the JRCERT were described in objective format in the ASRT 1976 Radiologic Technology curriculum guide. Therefore, it was the consensus of the group to review and update the curriculum guide and use it as a content base for a model 24-month radiographer curriculum.

In addition, entry-level clinical procedures were written in a uniform format. These two documents represented a reference for curricular component comparison. Due to the nature of the different types of institutions housing these programs, specific sequencing of clinical/didactic educational units was not completed. The emphasis was on attaining the model.

A Curricular Component Survey Form was developed to collect existing information concerning program course hours, clinical laboratory components, and recommended general studies courses. A Curricular Component Matrix was then designed (Figure 2.0) for each of the 14 content areas. As a result, it was possible to identify the course each area was found in, how much credit was awarded for the course, and where the course was in the curriculum sequence. This enhanced the DAG's ability to compare curricula and provided the basis for planning for articulation between 24-month certificate radiography programs and 24-month associate degree programs.

Radiologic Technology Program \ Content Area	Introduction To Radiologic Technology	Medical Ethics	Imaging	Radiographic Processing Technique	Human Structure and Function	Medical Terminology	Principles of Radiographic Exposure	Radiographic Procedures
Lexington Technical Institute	RAD. 100 4 C.R. Level I	RAD 100 4 C.R. RAD 110 6 C.R. RAD 120 6 C.R. Levels I, II	RAD 220 9 C.R. Level IV	RAD 100 4 C.R. RAD 120 6 C.R. RAD 200 4 C.R. Levels I, II	RAD 110 6 C.R. RAD 120 6 C.R. RAD 200 4 C.R. Levels I, II	RAD 100 4 C.R. Level I	RAD 100 4 C.R. RAD 120 6 C.R. RAD 210 6 C.R. Levels I, II, III	RAD 110 6 C.R. RAD 120 6 C.R. RAD 200 4 C.R. Levels I, II
University of Louisville	RAD. 129 1 C.R. Level I	AHC 300 B 1 C.R. Level I	RAD 230 2 C.R. Level IV	RAD 140 1 C.R. Level I	BSC 211 BSC 212 5 C.R. Levels I, II	AHC 300 A 1 C.R. Level I	RAD 135 RAD 136 4 C.R. Levels I, II	RAD 132 RAD 133 RAD 134 8 C.R. Levels I, II, III, IV
Northern Kentucky University	RAD 100 2 C.R. Level I	RAD 100 2 C.R. Level I	RAD 220 2 C.R. Level IV	RAD 112 2 C.R. Levels I, II, III	BIO 208 2 C.R. BIO 209 2 C.R. Levels I, II	RAD 100 2 C.R. RAD 112 2 C.R. Level II	RAD 112 2 C.R. RAD 114 2 C.R. RAD 201 3 C.R. RAD 220 3 C.R. Levels I, II, III	RAD 100 2 C.R. RAD 112 2 C.R. RAD 114 2 C.R. RAD 201 3 C.R. RAD 220 3 C.R. Levels I, II, III
Morehead State University	RAD 102 4 C.R. Level I	RAD 102 4 C.R. Level I ALH 304 2 C.R. Level III	RAD 212 3 C.R. Level II	RAD 102 4 C.R. Level I	BIOL 331 3 C.R. BIOL 332 3 C.R. Levels I, II	ALH 302 2 C.R. Level I	RAD 102 4 C.R. RAD 212 3 C.R. Levels I, II	RAD 101 4 C.R. RAD 201 3 C.R. RAD 202 3 C.R. RAD 214 3 C.R. Levels I, II, III, IV
Madisonville State Vocational School	RAD 100 4 C.R. Level I	RAD 100 4 C.R. Level I	RAD 220 9 C.R. Level IV	RAD 100 4 C.R. RAD 120 6 C.R. RAD 210 6 C.R. Levels I, II, IV.	RAD 100 4 C.R. RAD 120 6 C.R. RAD 200 4 C.R. Levels I, II, III	RAD 100 4 C.R. Level I	RAD 110 6 C.R. RAD 120 6 C.R. RAD 210 6 C.R. Level II, IV	RAD 110 6 C.R. RAD 120 6 C.R. RAD 200 4 C.R. Levels II, III
Good Samaritan Hospital	Introduction to RAD TECH 20 hours Level I	Introduction to RAD TECH 20 hours Level I	Special Procedures and Equipment 60 hours Levels III, IV	Radiographic Processing 20 hours Level I	Human Structure and Function 120 hours Levels II, III	Medical Terminology 80 hours Levels I, II	Principles of Radiographic Quality 160 hours Levels II, III	Radiographic Procedures 160 hours Levels I, II, III
Jefferson State Vocational School	Medical Office Radiology I 170 hours	Personal Vocational Relations 28 hours	Medical Office Radiology I 170 hours	Medical Office Radiology I 170 hours	Anatomy and Physiology 60 hours	Medical Terminology 25 hours	Medical Office Radiology II 80 hours	Medical Office Radiology I, II 250 hours
Bellarmine College								

Figure 2.0 Radiologic Technology Curricular Component Matrix (1980)

Figure 2.0 (cont.) Radiologic Technology Curricular Component Matrix (1980)

Radiologic Technology Program / Content Area	Principles of Radiation Protection	Radiographic Film Evaluation	Methods of Patient Care	Pathology	Radiologic Physics	Radiation Biology			
Lexington Technical Institute	RAD 100 4 C.R. RAD 110 6 C.R. RAD 220 9 C.R. Levels I, IV	RAD 110 6 C.R. RAD 120 6 C.R. Level II	RAD 100 4 C.R. RAD 110 6 C.R. RAD 120 4 C.R. RAD 200 4 C.R. Levels I, II, III	RAD 220 9 C.R. Level IV	RAD 100 4 C.R. RAD 210 6 C.R. Levels I, II, III, IV	RAD 100 4 C.R. RAD 110 6 C.R. RAD 220 9 C.R. Levels I, II, III, IV			
University of Louisville	RAD 141 1 C.R. Level I	RAD 235 1 C.R. Level IV	ARC 300 B 1 C.R. Level I	RAD 231 2 C.R. Level IV	RAD 138 1 C.R. Level II	RAD 232 2 C.R. Level III			
Northern Kentucky University	RAD 100 2 C.R. RAD 112 2 C.R. RAD 114 2 C.R. Levels I, II	RAD 110 2 C.R. RAD 111 2 C.R. RAD 112 2 C.R. RAD 113 2 C.R. RAD 201 3 C.R. RAD 220 3 C.R. Levels I, II, III, IV	RAD 113 2 C.R. RAD 114 2 C.R. RAD 201 3 C.R. Levels I, II, III	RAD 111 2 C.R. RAD 113 2 C.R. RAD 201 3 C.R. Levels I, II, III	PHY 110 PHY 112 Levels II, III	RAD 220 3 C.R. PHY 112 Levels III, IV			
Morehead State University	RAD 102 4 C.R. RAD 212 3 C.R. Levels I, II	RAD 101 4 C.R. RAD 201 3 C.R. RAD 202 3 C.R. RAD 211 2 C.R. Levels I, II, III	RAD 111 2 C.R. Level I	RAD 311 1 C.R. Level IV	RAD 102 4 C.R. RAD 213 3 C.R. Level III	RAD 213 3 C.R. Level III			
Madisonville State Vocational School	RAD 100 4 C.R. RAD 110 6 C.R. RAD 220 9 C.R. Level I, II, IV	RAD 110 6 C.R. RAD 120 6 C.R. Level II	RAD 100 4 C.R. RAD 110 6 C.R. RAD 120 6 C.R. RAD 200 4 C.R. Levels I, II, III	RAD 200 4 C.R. Level III	RAD 100 4 C.R. RAD 210 6 C.R. Level I, IV	RAD 220 9 C.R. Level IV			
Good Samaritan Hospital	Radiation Protection 40 hours Level III	Film Critique 50 hours Levels II, III Film Critique and Pathology 40 hrs Level IV	Patient Care 20 hours Level I	Film Critique and Pathology 40 hours Level IV	Radiologic Physics 160 hours Levels II, III	Radiation Biology 20 hours Level IV	Vascular Radiographic Procedures 20 hours Level IV		
Jefferson Area Vocational School	Medical Office Radiology I 170 hours	Medical Office Radiology I, II 250 hours	Medical Assistant Skills 240 hours	Conditions of Illness 40 hours	Medical Office Radiology I 170 hours	Medical Office Radiology I 170 hours	Psychology 20 hours	First Aid and CPR Certification 24 hours	Medical Office Laboratory I, II 252 hours
Bellarmine College									

Nuclear Medicine Technology. The nuclear medicine subcommittee reviewed the role/function task analysis defined by the national professional society, developed entry level curriculum objectives, compared existing curricula and recommended courses/experiences to be transferred.

Radiation Therapy Technology. Since there was only one radiation therapy program in the state, the program director had no peer with whom to review philosophy roles/functions/competencies and curriculum.

Radiological Health. Radiological Health as a professional area is in the early stages of development. There are no nationally recognized roles/functions or competencies. However, general roles, program goals, and educational requirements were identified.

Phase Three: Negotiating Transfer Agreements. The process for the actual negotiation of transfer agreements is illustrated in Figure 3.0.

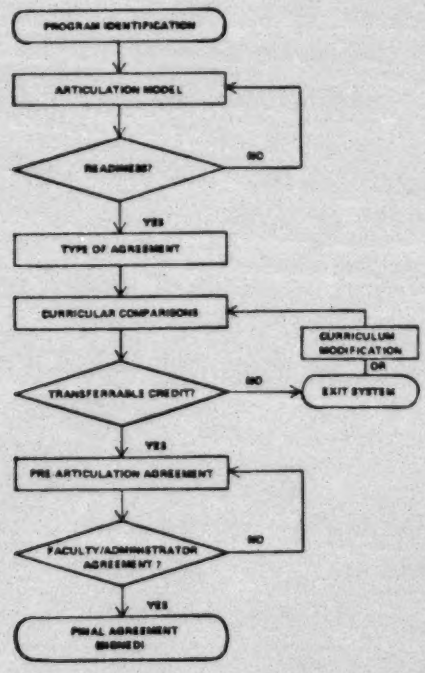


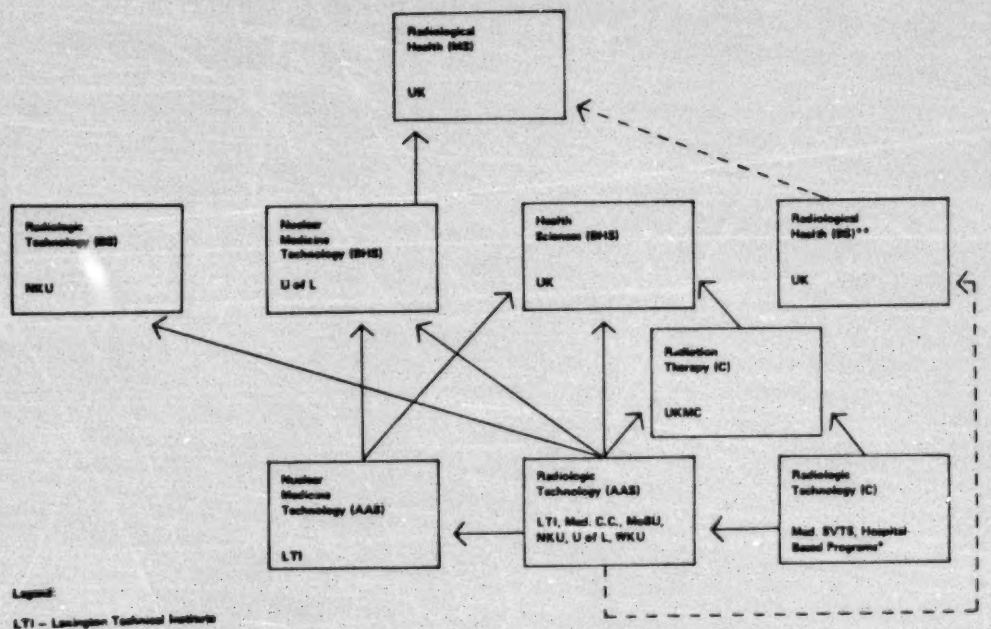
Figure 3.0. Process for Negotiating Transfer Agreements.

Each step in the process is described as follows:

Identify Programs. All radiological science programs from all levels of higher education and all types of institutions (i.e., vocational, private, public and proprietary) were identified. The radiological sciences discipline advisory group had representatives from either each of the programs or at least each educational system (e.g., hospital-based programs, vocational-technical schools). A comprehensive program inventory of all radiological science programs by discipline and degree was compiled specifically for this purpose (Appendix B). No complete directory of programs existed in the state, while the Council collected information for public higher education, a complete directory needed to include private education, vocational education, hospital-based programs and proprietary programs.

Develop a Theoretical Articulation Model. The program inventory served as the data source for preparing a diagrammatic view of the relationship between programs within each cluster. The resulting articulation model illustrated all the possibilities for transfer of credit (e.g., from hospital-based certificate programs to associate degree programs to baccalaureate programs). Figure 4.0 illustrates the articulation model developed for the radiological sciences.

During the initial development of the theoretical model the committee was established on an interdisciplinary basis. However, it soon became apparent that because of many unresolved issues in some of the professional areas (i.e., role delineation) it was unrealistic to work as a total group. Consequently, it was decided through group consensus to develop subcommittees by professional area and to work separately until the elements for an articulation design were developed.



Legend:

LTI – Lexington Technical Institute
M... C.C. – Madisonville Community College
Mad. SVTS – Madisonville State Vocational-Technical School
MoSU – Morehead State University
NKU – Northern Kentucky University
UK – University of Kentucky
U of L – University of Louisville
WKU – Western Kentucky University

*Hospital Based Programs:

Good Samaritan
King's Daughters
Owensboro–Daviess County
St. Joseph
Sts. Mary & Elizabeth
William Booth Memorial

**This program is proposed but does not currently exist.

Figure 4.0 Radiological Sciences Articulation Model

Subcommittees were developed, their early findings are summarized as follows:

Radiologic Technology:

1. Graduates of hospital-based certificate programs accredited by the American Medical Association's Council on Medical Education and who are certified by the American Registry of Radiologic Technologists should upon admission to an associate degree or bachelor degree radiologic technology program be granted optimum credit for previous hospital based experience. Curricular component comparisons should be used to determine the amount of credit granted.
2. Upon reviewing the medical assistant with limited radiologic technology curricula offered in the vocational education system compared to 24-month radiologic technology programs, it was determined that there was no major portion of the limited radiology technology course work that was transferrable.

Nuclear Medicine Technology

There was significant overlap between the nuclear medicine technician program and the nuclear medicine technology program. Consequently transfer of professional credit between these programs was possible.

Radiation Therapy Technology

Radiologic technology graduates had the necessary prerequisites to move into a Radiation Therapy Certificate program. Furthermore, groundwork was laid to address the possibility of completing a certificate in Radiation Therapy simultaneously with a Bachelor of Health Science Degree.

Radiological Health

Preliminary work indicated that transfer into a Bachelor of Science Degree

Program in Radiological Health from an Associate Degree program in radiologic technology would be very difficult because the math science prerequisites were not completed in the more applied radiologic technology curriculum.

After the five subcommittees completed their work, the DAG met as a total group and considered transfer possibilities among the interrelated disciplines. This work resulted in completion of the matrix illustrated in Figure 5.0. Note when considering all of the radiological sciences programs in the state a total of 73 transfer agreements were identified as possible. After each potential transfer agreement was identified the respective program directors drafted a preliminary statement of transfer. These preliminary statements provided input into the transfer agreements that were eventually identified.

Rank Order Transfer Agreements. Identifying the most feasible transfer agreements evolved from program to program communication and in some instances from system to system communication (e.g., vocational technical system and community college system). Such feasibility was essentially determined by three factors: (1) geographic proximity of programs potentially involved in the agreement, (2) status of program development and readiness to articulate, and (3) active interest by both programs or systems to work out conditions of agreement for transfer of credit.

TO / FROM	Bellarmine Rad. Tech.	Good Samaritan Tech.	Lex. T.I. Rad. Tech.	MoSU Rad. Tech.	NKU Rad. Tech.	WKU Rad. Tech.	U of L Rad. Tech.	Madisonville Rad. Tech.	Jeff. St. Voc./Ed. R.T. (L)	Lex. T.I. Nuclear Med.	UK Med. Center Rad. T.	U of L Nuclear Med.	UK Bach. H. S.	UK M.S. Rad. Health
Bellarmine Rad. Tech.										1	2	3	4	
Good Sam. Rad. Tech.	5		6	7	8	9	10	11		12	13	14	15	
L.T.I. Rad. Tech.										16	17	18	19	20
Morehead Rad. Tech.										21	22	23	24	25
Northern Ky Rad. Tech.										26	27	28	29	30
Western KU Rad. Tech.										31	32	33	34	35
U. of L. Rad. Tech.										36	37	38	39	40
Madisonville Rad. Tech.	41		42	43	44	45	46			47	48-C 74-AD	49-C 75-AD	50-C 76-AD	
Jeff. St. V/E Lim. RT	51	52	53	54	55	56	57	58						
L.T.I. Nuc. Med.	59		60	61	62	63	64				65	66	67	68
U.K. Med. C. Rad. Tech.										69	70	71	72	
U of L Nuc. Med.														73

Figure 5.0. Radiological Sciences Articulation Matrix.

The Discipline Advisory Group identified the following transfer agreements as most feasible:

	From	To
1.	Good Samaritan Hospital (C) Radiologic Technology	University of Louisville (AD) Radiologic Technology
2.	Good Samaritan Hospital (C) Radiologic Technology	Lexington Technical Institute (AD) Radiologic Technology
3.	Good Samaritan Hospital (C) Radiologic Technology	Morehead State University (AD) Radiologic Technology
4.	Morehead State University (AD) Radiologic Technology	University of Louisville (BHS) Nuclear Medicine Technology
5.	Lexington Technical Institute (AD) Nuclear Medicine	University of Louisville (BHS) Nuclear Medicine Technology
6.	Morehead State University (AD) Radiologic Technology	University of Kentucky (BHS) Health Science
7.	Radiologic Technology (C) (AD) Statewide	University of Kentucky Medical Center (C) Radiation Therapy

Determine the Type of Agreement. The type of agreement (i.e., between specific programs or between systems) was determined during the early planning stages. This was necessary to ensure participation from all possible programs. The leadership role was assumed by individuals or systems that had internalized the purpose and benefits of documenting conditions of agreement. While some systemwide agreements might have been ideal (e.g. between all hospital-based radiologic technology certificate programs and all associate degree radiologic programs in public institutions), "all" the programs did not share the same degree of interest. Consequently, mostly program specific agreements were negotiated.

Once the specific programs and/or systems decided that a transfer agreement was desirable the following steps were completed:

1. Review respective curricula including course content and sequence. The curricular comparisons took a significant amount of time as described in Phase Two of DAG activities. However, the process laid the groundwork for developing co-operative and trusting relationships between interested programs.
2. Mutually determine the existing amount of coursework/credit transferrable. Depending on the needs of the receiving program either individual courses or a block of credits became the major component of the agreement.
3. Draft a pre-articulation agreement following the provisions for developing a transfer agreement. A "Checklist for Developing the Transfer Agreement" was designed to serve as a guide for writing the transfer agreement. Using the checklist and the previously identified transferrable course work/credits the first draft of the agreement was written for consideration and review by both programs/systems. The draft became a working document for subsequent discussion and agreement.
4. Schedule a meeting between faculty and administrators to review and discuss the agreement. It was important for the individuals attending this meeting to be the faculty and administrators who would be instrumental in authorizing and implementing the agreement. These representatives knew the institutional policies and procedures that were required for successful implementation of the agreement.

5. Secure authorizing signatures on final transfer agreement. Depending on the stage of readiness more than one meeting was often required before signatures were obtained. For example, the initial meeting often resulted in a statement of intent by the representative from both programs. A modified version of the developmental group process the DAGs experienced was also evident here. Each time a new person was brought into the negotiations (e.g., an administrator familiar with but not actively involved in Kentucky Allied Health Project or additional faculty not participating on the DAG) significant orientation time was required. However, this orientation time was critical to the ultimate signing of the agreement.

With the successful signing of the transfer agreement students had the door to career mobility opened wider for them. In addition both programs/systems were enriched and their potential applicant pools were increased.

Transfer Agreements

Several transfer agreements were actively pursued to secure transfer of credit for students desiring career mobility. The two basic types of agreements negotiated were the block transfer agreement and the course specific transfer agreement. They were developed between educational systems or between specific programs/institutions.

An example of the block agreement was developed between the Good Samaritan Hospital Radiologic Technology Certificate Program and the University of Louisville Radiologic Technology Associate Degree Program where the certificate program graduates are awarded 45 credits toward the completion of the associate degree program.

Both systemwide and program specific agreements were negotiated. The one described above was specific to two programs/institutions, whereas a similar agreement was written between the same hospital-based program and the University of Kentucky Community College System. The type of agreement negotiated depended on specific circumstances and needs of the Discipline Advisory Group members. Sample transfer agreements are illustrated in Appendix C.

The actual agreements are as follows:

From	To
Radiologic Technology Good Samaritan Hospital (C)	Radiological Technology University of Louisville (AD)
Radiologic Technology Good Samaritan Hospital (C)	Radiologic Technology University of Kentucky Community College System (AD)
Radiologic Technology Good Samaritan Hospital (C)	Radiologic Technology Morehead State University (AD)
Radiologic Technology Good Samaritan Hospital (C)	Radiologic Technology Northern Kentucky University (AD)
Radiologic Technology Sts. Mary & Elizabeth Hospitals (C)	Radiologic Technology University of Louisville (AD)
Radiologic Technology Kings' Daughters Hospital (C)	Radiologic Technology Morehead State University (AD)
Radiologic Technology Kings' Daughters Hospital (C)	Radiologic Technology University of Kentucky Community College System (AD)
Radiologic Technology St. Joseph's Hospital (C)	Radiologic Technology University of Kentucky Community College System (AD)
Radiologic Technology Madisonville Vo-Tech School (C)	Radiologic Technology University of Kentucky Community College System (AD)
Radiologic Technology Statewide (AD)	Nuclear Medicine University of Louisville (BHS)

From	To
Radiologic Technology Statewide (C) (AD)	Radiation Therapy University of Kentucky (C)
Radiation Therapy University of Kentucky (C) Simultaneous Registration	Health Sciences University of Kentucky (BHS)

Recommendations

After three years of meetings and communication, the DAG members felt the purpose of articulation should remain a cooperative effort. With this in mind, the group developed the following recommendations for future action.

1.0 Hold annual or semiannual meetings of the Discipline Advisory Group.

1.1 Organization for these DAG meetings should be on a volunteer basis to be rotated to the facilities of individual group members.

1.2 At each meeting, agendas should be planned for succeeding meetings and interim activities.

2.0 Maintain the communication link between the Discipline Advisory Group and the Council on Higher Education.

3.0 Continue the negotiations currently underway to develop and sign transfer agreements between radiological sciences programs.

4.0 Conduct the manpower study designed by the DAG to survey all types of radiological personnel and their administrators.

4.1 Use the results of the manpower study to help determine where transfer agreements might best augment underserved areas in Kentucky.

4.2 Use the results of the manpower study to identify the existence of multicompetent practitioners and implications for educational programs to provide advanced clinical skills.

5.0 Evaluate the success of the transfer agreements in facilitating students' career mobility by documenting the number and origin of transfer students.

6.0 Develop clinical education modules for radiologic technology.

6.1 Identify similarities in the format and content of the clinical education component in Kentucky radiologic technology programs.

6.2 Develop standard clinical education modules for radiologic technology programs.

7.0 Maintain the involvement of hospital-based radiologic technology programs in DAG activities.

8.0 Routinely update the listing of radiological sciences program directors and disseminate to DAG members.

APPENDIX A

Planning and Evaluation with PERT

Planning and Evaluation with PERT

Introduction

Planning and evaluation have been distinct challenges to persons writing proposals or implementing projects. One method for managing these challenges is the Program Evaluation and Review Technique (PERT).

PERT forced the identification of project activities that were necessary to reach the project goal and permitted evaluation of progress toward the goal. For example, when KAHP activities for the first year were planned and subjected to PERT, it was evident that failure to complete the activities in the amount of time prescribed was likely. A 68 percent probability of completing the first year activities was calculated.

Alternative solutions to the problem, as identified by PERT, were discussed by Council staff. Adjustments were made and the probability of completing the activities was elevated to 72 percent; however, the success of the project remained in doubt. Further adjustments were made and the probability of completing the first year activities increased to 95 percent.

Planning KAHP Activities

Project activities were identified and a Gantt chart was developed that depicted the activities of KAHP. Although the activities were identified and placed within time frames, the interrelationships among the activities were difficult to identify. Therefore, a "network" of activities was developed for the project. The network illustrated activities which were dependent upon other activities and activities which paralleled one another.

Three completion times, expressed in working day units, for each activity were estimated by Council staff: (a) most optimistic, (m) most likely, and (b) most pessimistic. A mean estimated time was then calculated for each of the three estimates per activity using the following formula:

$$T_E = \frac{a + 4(m)+b}{6}$$

The variance of the three mean time estimates per activity was calculated as follows:

$$V^2 = \left(\frac{b-a}{6}\right)^2$$

The critical path was the path requiring the largest amount of completion time. If sufficient amounts of time and resources were not available to complete the critical path, the success of the project was doubtful.

Several paths through the network were possible. The estimated times (T_E) for activities in each possible path were summed and a critical path (CP) was identified. The other paths were considered alternate paths.

Three methods to increase the probability of completing the activities were available:

1. Increase the time available to complete the project (TL).

2. Identify time and resources available in parallel activities that may be applied to critical path activities; thus, reducing the total time estimate for the critical path.

3. Plan to complete selected activities along the critical path in less time than estimated (i.e. reduce the estimated time).

During the project, Council staff applied the second method. The estimated time for an alternate path was subtracted from the estimated time of the critical path. The difference was "slack time" and "slack resources;" those resources were applied to another activity in the critical path; thus, the total estimated time for the critical path was reduced.

The adjustment increased the probability of completing first-year the activities 4 percent; however, the chance of success needed to be improved, if possible. The length of the critical path was further reduced by using the third method of increasing probabilities.

By planning to concentrate several Council staffs' efforts and by incorporating materials prepared throughout the initial months of the project, the estimated time was reduced.

The probability of completion was recalculated after shortening the critical path. By reallocating personnel and resources in an alternate path and by shortening the critical path estimated time, the probability of completing the first year activities, for example, was raised from 68 percent to 95 percent. Council staff were more confident that a successful project was possible. The technique was applied throughout the project.

Evaluating KAHP Activities

A process for evaluating the degree to which the specific project objectives and the project goal were reached was developed by utilizing the inherent capability of PERT, i.e. an evaluation procedure. Although the PERT evaluation procedure can be utilized at the conclusion of a project, staff decided to use a portion of the procedure periodically, as activities along the critical path were completed. Thus, continual monitoring of the project's status permitted identification of potential future trouble spots. The evaluation procedures were used for KAHP DAG, TAG, and Task Force objectives at the conclusion of year one and during the beginning of year three.

A formative interim evaluation of advisory groups' attitudes and accomplishments was requested by Dr. Elizabeth King, Associate Director for Allied Health Education and KAHP Director, in November, 1980. The results were used to help: 1) identify specific advisory groups' activities/ issues which needed attention, 2) plan the KAHP final year activities, and 3) identify activities which may continue beyond the funding cycle of KAHP.

Two evaluation designs were the foundations of all measurements. Attitudinal measurements were collected each time an advisory group met. The degrees to which advisory groups' activities were met were measured at the end of year one and during October-December, 1980 in the final year of KAHP.

Periodic evaluations of attitudes provided on-going feedback about each meeting to the KAHP staff and advisory groups. The instrument was administered at the conclusion of each meeting.

Output measures were: 1) the degree to which each advisory group's activities were accomplished, and 2) the advisory groups' attitudes. The groups' activities addressed the project's goals; attitudes were measured to assess the "climate" of the KAHP. Appendices are instruments used to collect data. The instruments were developed by the KAHP advisory groups and staff.

The schedule for attitude data collection paralleled DAG, TAG, and Task Force meeting dates (monthly). The instruments were administered by the KAHP staff at the conclusion of each meeting; each advisory group member completed an instrument. Interim activity evaluation instruments were administered in FALL, 1980 by KAHP staff at the regularly scheduled meeting or through the mail.

System Maintenance

At the conclusion of year three, staff identified activities which were necessary for the maintenance of A Statewide System for Allied Health Education. The PERT planning process was applied: (1) activities were identified, (2) a Gantt chart was constructed, (3) a network of activities was constructed, and (4) the times were estimated.

The probability of completing the activities can be calculated when the allowed completion time is determined. During system implementation, feedback from PERT evaluation procedures will provide formative evaluation data to the Council.

APPENDIX B

Radiologic Technology Program Inventory

Maps Indicating Location and Type of School

Offering Programs in the Radiological Sciences

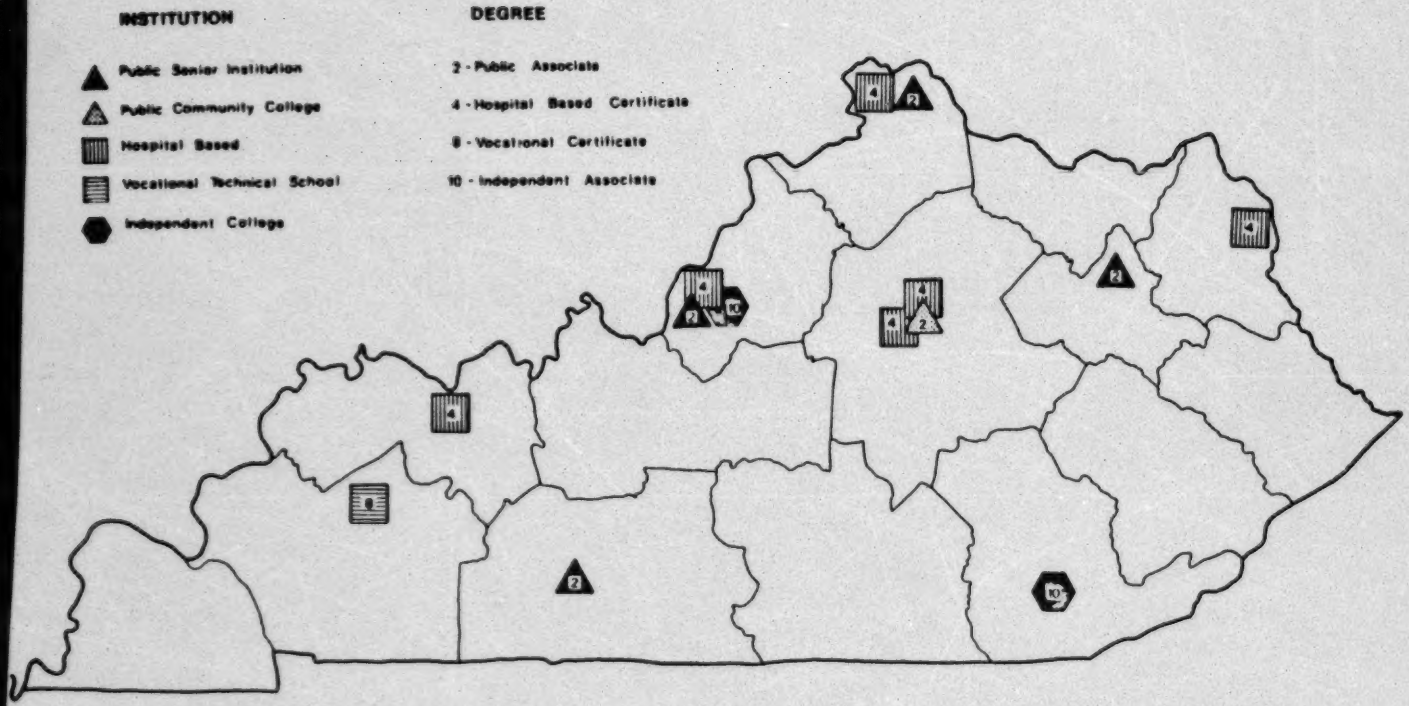
RADIOLOGIC TECHNOLOGY PROGRAM INVENTORY - KENTUCKY, 1981

The following table identified institutions in Kentucky which offer the academic programs described in the preceeding section.

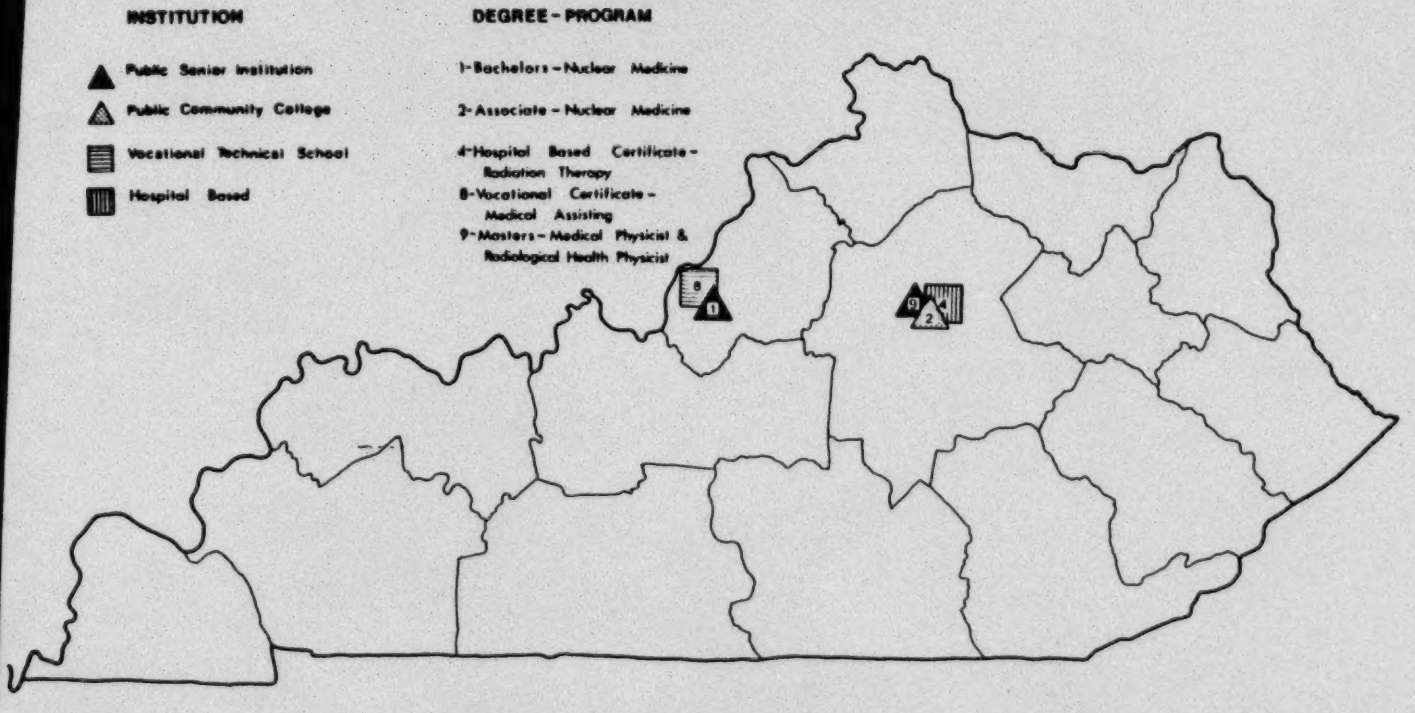
INSTITUTIONS	Rad. Tech. (C/AD)	Nuclear Med. Tech. (AD/BHS)	Med. Physicist (MS)	Rad. Health (MS)	Rad. Tech. (Limited) (C)	Rad. Therapy Tech. (C)
Public Senior Institutions						
Morehead State University	X (AD)					
Northern Kentucky University	X (AD)					
University of Louisville	X (AD)	X (BHS)				
Western Kentucky University	X (AD)					
University of Kentucky			X	X		
Community Colleges						
Lexington Technical Institute	X (AD)	X (AD)				
*Madisonville Community College	X (AD)					
Independent Colleges						
Kentucky Weslayan	X					
Union College	X (AD)					
Vocational Education						
Jefferson SVTS					X	
*Madisonville SVTS	X (C)					
Hospital-Based Program						
Kings Daughters - Ashland	X (C)					
St. Joseph - Lexington	X (C)					
William Booth Mem. - Florence	X (C)					
Owensboro-Daviess Co. - Owensboro	X (C)					
St.'s Mary & Elizabeth - Louisville	X (C)					
Good Samaritan - Lexington	X (C)					
University of Kentucky Medical Center						X
TOTAL	15	2	1	1	1	1

*The Certificate program is included in the AD program at Madisonville Community College.
C = Certificate AD = Associate Degree BHS = Bachelor of Health Science

LOCATION AND TYPE OF SCHOOL OFFERING A PREPARATORY DEGREE IN RADIOLOGIC TECHNOLOGY



LOCATION AND TYPE OF SCHOOL OFFERING A PREPARATORY DEGREE IN MISCELLANEOUS RADIOLOGICAL SCIENCES



APPENDIX C

Transfer Agreements

CONDITIONS OF AGREEMENT FOR TRANSFER OF CREDIT FROM THE GOOD SAMARITAN HOSPITAL CERTIFICATE PROGRAM IN RADIOLOGIC TECHNOLOGY TO THE UNIVERSITY OF LOUISVILLE ASSOCIATE DEGREE PROGRAM IN RADIOLOGIC TECHNOLOGY

According to the conditions of this agreement Radiologic Technology graduates from the Certificate Program of Good Samaritan Hospital, Lexington, can transfer to the Radiologic Technology Associate Degree Program at the University of Louisville.

(1) Upon formal documentation of completion of the 24 month Radiologic Technology Program at Good Samaritan Hospital School of Radiologic Technology and upon becoming registered by the American Registry of Radiologic Technologists (ARRT), these graduates will be eligible for admission to the Radiologic Technology Associate Degree Program at the University of Louisville.

(2) Successful completion of the 24 month program is defined by the current standards at the program; if requirements for graduation change at either program the other program is to be notified and the conditions of this agreement reviewed.

(3) Graduates from the Good Samaritan Hospital Program shall be subject to the same admission and academic policies for all applicants to and students in the University of Louisville program.

(4) Good Samaritan Hospital Radiologic Technology graduates admitted to the Radiologic Technology Associate Degree Program at the University of Louisville shall be awarded 45 credits for completion of the Good Samaritan Hospital Radiologic Technology Certificate Program followed by ARRT Registration. In order to receive an Associate Degree in Radiologic Technology from the University of Louisville, they will also be required to complete the following courses at the University of Louisville Radiologic Technology Program*:

English 101	College Writing	3 Credits
English 102	Intermediate Writing	3 Credits
or	or	
TAS 111	Public Speaking	3 Credits
Math 101	Elementary Algebra	3 Credits
Psychology 201	Introduction to Psychology	3 Credits
Sociology 201	Introduction to Sociology	3 Credits
TOTAL CREDITS		15 Credits

(4.1) The 45 credits transferred from the Good Samaritan Hospital Program shall be listed as a Pass on the students' transcripts at the University of Louisville. Therefore, the students' Grade Point Average from Good Samaritan Hospital is not transferred.

*Courses taken at the University of Louisville Radiologic Technology Program must be completed with a minimum GPA of 2.0 on a 4.0 scale.

(4.2) The full block of 45 credits shall be awarded to individuals who have graduated from the Good Samaritan Hospital Certificate Program in Radiologic Technology since 1977. Individuals who graduated prior to 1977 will have their trascripts evaluated by the University of Louisville Associate Degree Program in Radiologic Technology on an individual basis. These individuals may receive a lesser number of credits and be required to complete specified professional courses.

(5) The Good Samaritan Hospital program shall provide guidance and counseling for students interested in articulating to the University of Louisville Radiologic Technology Associate Degree Program and make known the conditions of this agreement to students/graduates of the Good Samaritan Program. In addition the University of Louisville shall identify a faculty member within the Radiologic Technology Associate Degree Program to serve as an advisor for transfer students.

(6) If either party wishes to modify this agreement it is understood that students who have already transferred to the University of Louisville will have the opportunity to complete their program under the conditions of this agreement.

(7) Grievances from any party associated or influenced by these conditions of agreement shall be made known to and addressed by the appropriate departmental and/or administrative level for discussion of implications of the grievance in order to revise/amend these conditions of agreements as decided by both programs.

(8) These conditions of agreement shall be deemd invalid without the authorizing signatures representing the Good Samaritan Hospital School of Radiologic Technology and the University of Louisville Associate Degree Radiologic Technology Program.

(9) The conditions of this agreement shall be reviewed every 2 years and revised or amended as agreed upon by both programs.

(10) Each program retains the right to change their curriculum and agrees to inform the other program of such changes as related to the conditions of this agreement.

November 18, 1981

I hereby accept the conditions of this agreement for transfer of credit for graduates from the Certificate Program in Radiologic Technology at the Good Samaritan Hospital, Lexington to the Associate Degree Program in Radiologic Technology at the University of Louisville.

Hospital Administrator
Good Samaritan Hospital — 6/14/82 Date

Program Medical Advisor
Good Samaritan Hospital — 5-24-82 Date

JoAnn Gorham, R.T.(R)
Technical Director
Good Samaritan Hospital — 5/24/82 Date

Lucy LaFontaine R.T.(R)
Program Director
Good Samaritan Hospital — 5/24/82 Date

Director, Division of Allied Health
University of Louisville — 5/12/82 Date

Program Medical Advisor
University of Louisville — 5/15/82 Date

Program Director
University of Louisville — 5/13/82 Date

DRAFT
6/15/82

RADIOLOGIC TECHNOLOGY

ARTICULATION AND TRANSFER

COMMITTEE REPORT

JUNE 1982

UNIVERSITY OF KENTUCKY COMMUNITY COLLEGE SYSTEM

AND THE

GOOD SAMARITAN HOSPITAL SCHOOL OF RADIOLOGIC TECHNOLOGY

UNIVERSITY OF KENTUCKY
COMMUNITY COLLEGE SYSTEM
AND
GOOD SAMARITAN HOSPITAL
RADIOLOGIC TECHNOLOGY ARTICULATION AND TRANSFER
COMMITTEE REPORT

Introduction

The Radiologic Technology Articulation and Transfer Committee for Good Samaritan Hospital and the University of Kentucky Community College System was appointed in March, 1982. Members included representatives from the University of Kentucky Community College System, Good Samaritan Hospital School of Radiologic Technology, and the Council on Higher Education. The Committee was charged with the assignment of developing an articulation agreement between the Good Samaritan Hospital School of Radiologic Technology and the University of Kentucky Community College System. This would be a plan for granting credit for radiologic technology courses offered by the Good Samaritan Hospital School of Radiologic Technology toward the Associate in Applied Science degree conferred by the University of Kentucky Community College System.

Procedures

A review of both radiologic technology programs was done. This included the philosophy, admission criteria/guidelines, program competencies, and curriculum (course descriptions, prerequisites, minimum level exit competencies, course outlines, evaluation practices, etc.). Articulation efforts were confined to the radiologic technology courses, since special examinations are available for establishing credit in the general education courses.

The six radiologic technology courses in the Community College System radiologic technology curriculum were reviewed in relation to the commonalities and dissimilarities with the radiologic technology curriculum offered by the Good Samaritan Hospital School of Radiologic Technology. The investigation was done with concern for identification of course content and skill proficiency levels ("C" grade level equivalent as defined by individual program and using stated criteria), which might be transferable to the Radiologic Technology programs in the Community College System. Because of the sequence and course content, articulation between the Good Samaritan Hospital School of Radiologic Technology and the Radiologic Technology Program in the Community College System would of necessity be based upon the completion of the radiologic technology program at Good Samaritan Hospital.

Proposed Articulation and Transfer Plan

After careful review of the radiologic technology curricula, the Committee recommends that 35 credit hours be awarded to students admitted to a Community College System Radiologic Technology program who have completed the Good Samaritan Hospital Radiologic Technology Program and who have been certified by the American Registry of Radiologic Technologists (ARRT). The agreement is to be effective with graduates from the Good Samaritan Hospital

School of Radiologic Technology beginning in 1977. Graduates prior to that date may establish course credit by special examination. Students must be admitted to the Radiologic Technology program prior to requesting a special examination, and the number of times he/she may take a special examination is at the discretion of the Radiologic Technology program coordinator at the Community College.

The Committee recommends:

1. that 35 credit hours be given to those Good Samaritan Hospital School of Radiologic Technology graduates since 1977, who are registered and have been admitted to a Community College System Radiologic Technology Program.

2. Graduates of the Good Samaritan Hospital School of Radiologic Technology prior to 1977, may establish course credit by special examination.

3. that the implementation of the Articulation and Transfer Plan be effective December, 1982.

4. that the Community College System and the Good Samaritan Hospital plan staff and faculty development activities to facilitate dissemination and implementation of this agreement.

5. that the agreement be reviewed periodically to insure that any curriculum revision by either program faculty are noted and the agreement modified accordingly.

6. that an ongoing evaluation plan be developed to assess the effectiveness and viability of the Articulation and Transfer Plan.

APPENDIX A

University of Kentucky
Community College System
And
Good Samaritan Hospital
Radiologic Technology Articulation and Transfer
Committee Membership

Ms. Marie L. Piekarski, Chairman
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Community College System
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Lexington Technical Institute
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Lexington, KY 40506-0235

Dr. Sharron Jaggard
Lexington Technical Institute
John W. Oswald Building
Lexington, KY 40506-0235

GOOD SAMARITAN HOSPITAL
SCHOOL OF RADIOLOGIC TECHNOLOGY
Curriculum

Course	Hours
1. Introduction to Radiologic Technology	10
2. Medical Ethics	10
3. Special Procedures and Equipment	60
4. Radiographic Processing	20
5. Human Structure and Function	120
6. Medical Terminology	80
7. Principles of Radiographic Exposure	160
8. Radiographic Procedures	160
9. Principles of Radiation Protection	40
10. Methods of Patient Care	20
11. Pathology	40
12. Radiologic Physics	160
13. Radiation Biology	20
14. Special Procedures	20
15. Contrast Media	10
16. Quality Control	10
17. Basic Math	20
18. Positioning Lab	262
19. Maintenance of Quality Health Care	As Assigned
TOTAL	1222

DRAFT
6/18/82
ATTACHMENT A

UNIVERSITY OF KENTUCKY
COMMUNITY COLLEGE SYSTEM
RADIOLOGIC TECHNOLOGY PROGRAM
Curriculum

FIRST YEAR

Summer Session and Intersession		Crs.
RAD 100	Radiologic Technology I.	4
MAH 151	Applied Mathematics I or	3
MA 109	College Algebra.	(3)

Fall Semester		
RAD 110	Radiologic Technology II	6
ANA 104	Anatomy and Physiology or.	4
BSL 160	Integrated Human Biology I	(4)
MAH 152	Applied Mathematics II or	3
MA 109	College Algebra.	(3)
ENG 101	Freshman Composition or.	3
CMS 151	Composition for Technical Students I	(3)

Spring Semester		
RAD 120	Radiologic Technology III.	6
BSL 161	Integrated Human Biology II.	(4)
ENG 102	Advanced Freshman Composition or	3
CMS 152	Composition for Technical Students II	(3)
PHY 152	Introduction to Physics or	3
PHY 205	Introduction to Life Sciences I.	(4)
PY 110	General Psychology or.	3
PSY 100	Introduction to Psychology	(4)

SECOND YEAR

Summer Session		
RAD 200	Radiologic Technology IV	4
PHY 207	Introduction to Life Sciences II	(4)

Fall Semester		
RAD 210	Radiologic Technology V.	6
PSY 223	Developmental Psychology	3
Elective*		3

Spring Semester		
RAD 220	Radiologic Technology VI	9
Elective		3
TOTAL		66-69

*Students taking PHY 205/207 will have three credits of electives only.

COURSES RECOMMENDED FOR ARTICULATION

Radiologic Technology

Good Samaritan Hospital School of Radiologic Technology*	University of Kentucky Community College System Radiologic Technology*
Introduction to Radiology (incl. Elementary Radiation Protection) Patient Care ("Nursing") Medical Ethics Orientation (incl. Introduction to Radiological Equipment) Radiographic Processing Medical Terminology Positioning Lab Radiographic Procedures Pathology	RAD 100 - Radiologic Technology I 4 credit hours
Principles of Radiographic Exposure (Radiographic Quality) Radiographic Procedures (incl. Anatomy and Positioning) Positioning Lab Radiographic Processing Pathology	RAD 110 - Radiologic Technology II 6 credit hours
Radiographic Procedures (Radiographic Quality) Pathology Contrast Media Principles of Radiographic Exposure Radiographic Procedures Positioning Lab	RAD 120 - Radiologic Technology III 6 credit hours

*COMPETENCY LEVEL - Grade of 85 required in Clinical; C-Level

Good Samaritan Hospital School of Radiologic Technology*	University of Kentucky Community College System Radiologic Technology Program
Human Structure and Function Special Procedures Radiographic Procedures (incl. Anatomy and Positioning) Contrast Media Pathology	RAD 200 - Radiologic Technology IV 4 credit hours
Principles of Radiographic Exposure (Radiographic Quality) Radiographic Processing Quality Control Radiographic Physics Pathology	RAD 210 - Radiologic Technology V 6 credit hours
Special Procedures and Equipment Radiation Biology Radiographic Processing Maintainence of Quality Health Care Pathology	RAD 220 - Radiologic Technology VI 9 credit hours
TOTAL: 1222 clock hours	TOTAL: 35 credit hours

DRAFT
6/15/82
ATTACHMENT C

STUDENT ARTICULATION TRANSCRIPT*

Student Name: _____ Social Security Number: _____

Student Address: _____
(Street, RFD, or P. O.) City State Zip

Phone: _____ Birth Date: _____ KY Resident? Yes ____ No ____

Institution from which student is articulating:	Institution in which student is seeking credit:
Institution: _____	Institution: _____
Address: _____	Address: _____
_____	_____
Program: _____	Major: _____
Entry Date: _____ Exit Date: _____	Hegis Code: _____
	Planned Date of Enrollment: _____

Units, Courses or programs in which competency levels have been attained**	Course No., title, and credit granted based on articulation agreement (to be completed by credit awarding institutions**)
Registry No. _____	
_____ Date (Month, Year)	Credit granted by receiving institution:
Student record validated by:	_____ Signature Date
_____ Chief Administrative Officer of the School Date	_____ Position

*This transcript was designed to recommend students as having competencies or groups of competencies for which credit may be granted based on an articulation agreement. It was not designed to replace student achievement or historical records.

**Entries should be made exactly as they appear in the articulation agreement.

DRAFT
6/15/82
ATTACHMENT C

STUDENT ARTICULATION TRANSCRIPT*

SAMPLE

Student Name: Donna Doe Social Security Number: 142-66-0100

Student Address: P.O. Box 23 (Street, RFD, or P. O.) Lexington, (City) Ky. (State) 40503 (Zip)

Phone: 606/277-1234 Birth Date: 5/6/60 KY Resident? Yes X No

Institution from which student is articulating:	Institution in which student is seeking credit:
Good Samaritan Hospital School	
Institution: Radiologic Technology	Institution: Lexington Technical Inst.
Address: 310 South Limestone St.	Address: Cooper Dr.
Lexington Ky, 40508	Lexington, Ky. 40506/02351
Program: Radiol. . Technology	Major: Radiologic Technology
Entry Date: 7/79 Exit Date: 7/81	Hegis Code: 5207
	Planned Date of Enrollment: June 1982

Units, Courses or programs in which competency levels have been attained**	Course No., title, and credit granted based on articulation agreement (to be completed by credit awarding institutions**)
Radiologic Technology Program	RAD 100 - Radiologic Technology I - 4 credits RAD 110 - Radiologic Technology II - 6 credit RAD 120 - Radiologic Technology III - 6 credi RAD 200 - Radiologic Technology IV - 4 credit RAD 210 - Radiologic Technology V - 6 credits RAD 220 - Radiologic Technology VI - 9 credit
Registry No. 23456	
February, 1982 (Date: Month, Year)	Credit granted by receiving institution:
Student record validated by:	Dr William Price 4/1/1948 (Signature, Date)
Lucy LaFontaine 12/15/82 (Chief Administrative Officer of the School, Date)	Director (Position)

*This transcript was designed to recommend students as having competencies or groups of competencies for which credit may be granted based on an articulation agreement. It was not designed to replace student achievement or historical records.

**Entries should be made exactly as they appear in the articulation agreement.

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CONDITIONS OF AGREEMENT FOR TRANSFER OF CREDIT

There exists the potential for Radiologic Technology graduates from the certificate program at Good Samaritan Hospital, Lexington, to transfer to the Radiologic Technology associate degree program at Morehead State University.

(1) Upon formal documentation of successful completion of the 24 month Radiologic Technology Program at Good Samaritan Hospital School of Radiologic Technology and upon becoming registered by the American Registry of Radiologic Technologists, these graduates will be eligible for admission to the Radiologic Technology Program at Morehead State University.

(2) Successful completion of the 24 month program is defined by the current standards at the program; if requirements for graduation change at either program the other program is to be notified and the conditions of this agreement reviewed.

(3) Graduates from the Good Samaritan program shall be subject to the same admission and retention policies for all applicants to and students in the Morehead State University program.

(4) Successful Good Samaritan Hospital graduates admitted to the Morehead State University Program shall be awarded 56 credits for their radiologic technology courses toward an associate degree at Morehead State University. In addition, they will be required to successfully complete the following courses at Morehead State University:

AHS 302	Medical Terminology	2 Credits
Math 135	Mathematics for Technical Students	3
Biol 331	Human Anatomy	3
Eng 101	Composition I	3
Biol 332	Human Physiology	3
Eng 192	Technical Composition	3
Psy 154	Intro to Psychology	3
AHS 304	Medical Law & Ethics	2
		22 Credits

(5) The Good Samaritan program shall provide guidance and counseling for students interested in articulating to the Morehead State University Program and make known these conditions of agreement to students/ graduates fo the Good Samaritan Program.

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(6) Grievances from any party associated or influenced by these conditions of agreement shall be made known to and addressed by the appropriate departmental and/or administrative level for discussion of implications of the grievance in order to revise/amend these conditions of agreements as decided by both programs.

(7) These conditions of agreement shall be deemed invalid without the authorizing signatures representing the Good Samaritan Hospital School of Radiologic Technology and the Morehead State University Radiologic Technology Program.

(8) The conditions of this agreement shall be reviewed periodically and revised or amended as agreed upon by both programs.

(9) Each program retains the right to change their curriculum and agrees to inform the other program of such changes as related to these conditions of agreement.

Fall-1981

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I hereby authorize acceptance of these conditions of agreement for transfer of credit for successful graduates from the certificate program in Radiologic Technology at the Good Samaritan Hospital, Lexington, and admitted to the associate degree program in Radiologic Technology at Morehead State University.

_____
Authorizing Signature

_____ _____
Program Date

_____
Authorizing Signature

_____ _____
Program Date

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Authorizing Signature

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Program Date

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Authorizing Signature

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Program Date

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Program Date

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Authorizing Signature

_____ _____
Program Date

Conditions of Agreement for Admission to the Radiation Therapy Technology Program At The University of Kentucky Medical Center

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(1) It has been recognized there exist a significant group of radiologic technology programs accredited by CAHEA where students, upon documentation of successful completion of one of the programs and upon becoming registered by the American Registry of Radiologic Technologists, will be eligible for admission to the University of Kentucky Medical Center Radiation Therapy Technology Program. These Radiologic Technology programs include those at:

(1) Good Samaritan Hospital - Lexington (C)
(2) Kings' Daughters Hospital - Ashland (C)
(3) Lexington Technical Institute (AD)
(4) Madisonville Community College (AD)
(5) Madisonville SVTS (C)
(6) Morehead State University (AD)
(7) Northern Kentucky University (AD)
(8) Owensboro - Daviess Co. Hospital - Owensboro (C)
(9) St. Joseph Hospital - Lexington (C)
(10) Sts. Mary & Elizabeth Hospital - Louisville (C)
(11) University of Louisville (AD)
(12) Western Kentucky University (AD)
(13) William Booth Memorial Hospital - Florence (C)

(2) Successful completion of a program shall be defined by standards at each accredited radiologic technology program.

(3) Students from the radiologic technology programs listed in (1) articulating to the Radiation Therapy Technology Program shall be subject to the same admission and retention policies for all applicants and students in the program.

(4) The radiologic technology programs listed in (1) shall provide guidance and counseling for students who may potentially articulate to the Radiation Therapy Technology Program.

(5) These conditions of agreement shall be made known and readily available to students/graduates of the radiologic technology programs listed in (1).

(6) Grievances of any participating institutions shall be made known to and addressed by the appropriate departmental and/or administrative level for discussion and action on the implications of the grievance in order to amend, as appropriate, these conditions of agreement.

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(7) The conditions of this agreement shall be deemed invalid without the authorizing signatures representing the Radiation Therapy Technology Program at the University of Kentucky Medical Center and without the supporting signatures form the radiologic technology programs.

(8) The conditions in this agreement shall be reviewed periodically and revised or amended as appropriate, as agreed upon by the programs involved.

(9) The Radiation Therapy Technology Program and the programs listed in (1) retain the right to change their curricula and agree to inform the other programs in this agreement affected by the change.

May 11, 1982

I hereby authorize implementation of these conditions of agreement to accept those students who have successfully graduated from any of the programs listed in (1) and registered by the American Registry of Radiologic Technologists as eligible for admission to the Radiation Therapy Technology Program at the University of Kentucky Medical Center.

Administrator University of Kentucky Medical Center	Date
Medical Advisor Radiation Therapy Technology Program University of Kentucky Medical Center	Date
Program Director Radiation Therapy Technology Program University of Kentucky Medical Center	Date
Program Director Radiologic Technology Program Good Samaritan Hospital	Date
Program Director Radiologic Technology Program King's Daughters Hospital	Date
Program Director Radiologic Technology Program Lexington Technical Institute	Date
Program Director Radiologic Technology Program Madisonville Community College	Date

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Program Director
Radiologic Technology Program
Madisonville State Voc-Tech School

Date

Program Director
Radiologic Technology Program
Morehead State University

Date

Program Director
Radiologic Technology Program
Northern Kentucky University

Date

Program Director
Radiologic Technology Program
Owensboro-Daviess Co. Hospital

Date

Program Director
Radiologic Technology Program
St. Joseph Hospital

Date

Program Director
Radiologic Technology Program
Sts. Mary & Elizabeth Hospital

Date

Program Director
Radiologic Technology Program
University of Louisville

Date

Program Director
Radiologic Technology Program
Western Kentucky University

Date

DRAFT

_____ _____

Program Director Date
Radiologic Technology Program
William Booth Memorial Hospital

Second Draft
July 15, 1982
(by Frank Howard)

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CONDITIONS OF AGREEMENT FOR TRANSFER OF CREDIT FROM ASSOCIATE DEGREE RADIOLOGIC TECHNOLOGY PROGRAMS TO THE BACHELOR OF HEALTH SCIENCE NUCLEAR MEDICINE TECHNOLOGY PROGRAM AT THE UNIVERSITY OF LOUISVILLE

(1) Graduates of a Kentucky associate degree radiologic technology program who are registered or registry eligible with the American Registry of Radiologic Technologists are eligible to apply for admission to the University of Louisville Bachelor of Health Science Nuclear Medicine Technology Program. These radiologic technology programs include those at:

Lexington Technical Institute

Madisonville Community College

Morehead State University

Northern Kentucky University

Western Kentucky University

(2) Students from these programs accepted into the University of Louisville Nuclear Medicine Technology Program will enter at the junior level.

(3) General education course requirements for the Nuclear Medicine Technology Program must also be satisfied by the radiologic technology transfer students. Juniors and Seniors in the Nuclear Medicine Technology Program have usually completed the following

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general education courses before entering their junior year:

Course	Semesters
English	One
Introduction to Psychology	One
Introduction to Sociology	One
Speech Communication	One
Algebra/Trigonometry	One
General Chemistry	Two

(4) Coursework from the Radiologic Technology Programs which may be substituted for similar courses in the Nuclear Medicine Technology curriculum include:

Medical Ethics

Medical Terminology

Emergency Medical Procedures

Methods of Patient Care

Anatomy and Physiology

Pathology

Radiation Biology

(4.1) Specific Radiologic Technology curriculum offerings will be evaluated by the faculty of the University of Louisville Nuclear Medicine Technology Program to determine acceptability for substitution.

(5) The Associate Degree Programs in Radiologic Technology listed in item (1) shall provide guidance and counseling for their respective

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students interested in articulating to the University of Louisville Bachelor of Health Science Nuclear Medicine Technology Program and make known to them the conditions of this agreement. In addition, the Program Director of Nuclear Medicine Technology shall serve as an advisor for transfer students.

(6) The faculty of the Nuclear Medicine Technology Program will evaluate the success of the transfer students in comparison to other students with input from the faculty of the Radiologic Technology Programs listed in item (1).

(7) If any party wishes to modify this agreement, it is understood that students who have already transferred to the University of Louisville will have the opportunity to complete their program under the conditions of this agreement.

(8) Grievances from any party associated or influenced by these conditions of agreement shall be made known to and addressed by the appropriate departmental and/or administrative level for discussion of implications of the grievance in order to revise/amend these conditions of agreement.

(9) These conditions of agreement shall be deemed invalid without the authorizing signatures representing the University of Louisville Bachelor of Health Science Nuclear Medicine Technology Program and the Associate Degree Programs in Radiologic Technology listed in item (1).

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(10) The conditions of this agreement shall be reviewed annually and revised or amended as appropriate.

(11) Each program retains the right to change its curriculum and agrees to inform the appropriate program(s) of such changes as related to the conditions of this agreement.

(12) This agreement shall become effective beginning with the August 1983 Nuclear Medicine Technology class.

I hereby accept the conditions of this agreement for the transfer of credit for ARRT registered or registry eligible graduates from the Associate Degree Programs in Radiologic Technology listed in item (1) to the Bachelor of Health Science Program in Nuclear Medicine Technology at the University of Louisville.

Director, Division of Allied Health University of Louisville	Other Institutions
Division Linkage Coordinator University of Louisville	Other Institutions
Program Director, Nuclear Medicine Technology University of Louisville	Other Institutions